APOLLO G&N Specification
ND 1002256
Original Issue Date: 10/5/65
Release Authority: TDRR 22880
Class A **Release**

APOLLO REQUIREMENTS FOR PROCESS CONTROL AND FABRICATION OF PARALLEL GAP RESISTANCE - WELDED ELECTRONIC CIRCUIT MODULES AND ASSEMBLIES

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of pages 1 **to** 17 **inclusive.**

APPROVALS	NASA/MSC	10/1/65	Eldon C Hall 10/4/65 MIT/IL	W Kupfer 5 Oct 65	6/24/65 6/29/65 RAY 10 Aug 65

NOT REQUIRED PER LETTER
NASA PP7-65-612

LOC. OF MSTR. RAY

APOLLO G & N Specification
ND 1002256

APOLLO REQUIREMENTS FOR PROCESS CONTROL AND FABRICATION OF PARALLEL GAP RESISTANCE - WELDED ELECTRONIC CIRCUIT MODULES AND ASSEMBLIES

1. PURPOSE

1.1 This document establishes the minimum requirements for process control and fabrication of electronic assemblies utilizing parallel gap resistance-welding. It also specifies certification and qualification requirements for welding personnel, welding equipment, materials, weld schedules, and defines quality requirements.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on the date of application of this document form a part of this specification to the extent specified herein.

(a)	ND 1002280	Apollo Parallel Gap Visual Criteria
(b)	ND PS 1015402	Materials Specification (Kovar, Gold Plate)
(c)	ND PS 1015400	Materials Specification (Nickel Ribbon Wire)
(d)	ND 1002281	Apollo Parallel Gap Wiring Standards
(e)	ND 1002268	Apollo Parallel Gap Welding Standard Repairs

2.2 Precedence. The provisions of this specification shall be applicable to all phases of parallel gap welding to the extent specified herein. In the event of conflict between the requirements of the applicable drawings, this specification and other documents cited herein, the requirements of the applicable drawings, this specification and other documents specified herein shall govern in that order.

3. GENERAL REQUIREMENTS

3.1 Fabrication

3.1.1 Welded electronic circuit modules and assemblies shall be fabricated in accordance with the applicable drawings.

3.2 Materials

3.2.1 Materials shall be used that conform to the requirements of Paragraphs 2.1 b and c.

3.3 Equipment

3.3.1 The welding machine shall consist of a controllable electrical energy source or sources, one or more welding heads and electrodes. The equipment must be capable of maintaining accurately and reliably the force, and gap and the controlled pulses of electrical energy to the weldments.

3.3.1.1 The pulse duration, amplitude, and voltage wave form delivered to the electrodes shall be repeatable within ±5% for any given setting.

3.3.1.1.1 Waveform or pulse shape reading cited herein shall closely approximate the growth and decay of the current and/or voltage observed at the electrodes. The waveform or pulse shape requirement may be satisfied by comparing the welder output to a standard waveform or pulse shape on a graticule in conjunction with an oscilloscope with a long persistence screen.

3.3.1.2 The force at the electrodes shall be repeatable within ± 0.25 pounds (114 grams) for each electrode.

3.3.1.3 Welding electrodes shall conform to the contractors' configuration drawings.

3.3.1.3.1 Electrode Gap adjustments for a specified setting must be set within ± .001 inch.

3.3.2 Pull Test Machines shall be capable of pulling at a uniform rate not to exceed 40 inches per minute linear velocity. The machines shall be accurate within 2 per cent of the full-scale-force-readings, or 0.2 pounds, whichever is less.

3.3.3 Binocular Microscopes of 10 diameters power shall be used for inspection of parallel gap welds. Binocular microscopes of 10 diameters minimum shall be used for production welding.

3.3.4 A camera microscope with a minimum capability of 75 diameters shall be used for metallurgical examination.

3.3.5 Electrode force gage.

3.3.5.1 Electrode force gages used shall be readable to 0.125 pound maximum (57 grams) per division.

3.3.6 Equipment shall be available that is capable of measuring the electrical output at the electrodes with the accuracy detailed in Paragraph 4.2.1. Electrical measurements shall be made at the welding surface of the electrodes.

3.4 Handling and Workmanship: Precautions shall be taken to avoid unnecessary handling of components and component leads. To prevent contamination, finger cots or other protective covering shall be worn by welding and inspection personnel.

3.4.1 Surfaces to be welded shall be clean and free of all traces of wax, oil, grease, and other organic contaminants.

3.4.2 Bending of component leads (unless specified) must be avoided. Precautions shall be taken to avoid excessive handling of wires and leads in a manner which may result in bending or kinking.

3.4.3 No identification or handling methods shall be utilized which may contaminate the leads in the zone to be welded.

3.4.4 Components, component leads and jumper wires shall be insulated as specified on the drawing.

3.4.5 Precoating of components, unless otherwise specified on the drawing or process sheet, shall not be done prior to assembly and welding.

3.4.6 Welding surfaces of electrodes showing signs of pitting, pick-up deterioration, contamination, excessive oxidation, wear or other damage shall not be used.

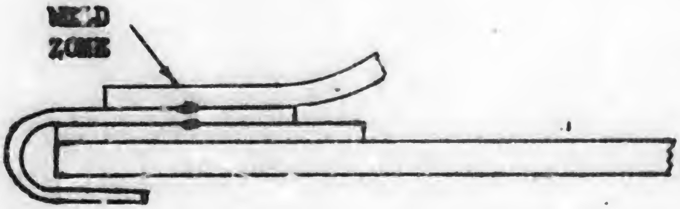
3.4.7 'Electrodes may be cleaned with the following:''

(a) 600 grit or finer
(b) Methylene chloride
(c) Trichlorethylene
(d) Metal files shall not be used to recondition electrodes on a welding machine at the welding station.

3.4.8 There shall be no dirt or contamination in the electrode gap.

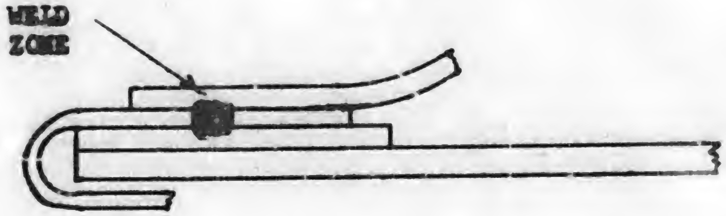
3.4.9 No weld shall be made over an existing weld, (fig. 1) but a single weld may be made on a lamination of materials (fig. 2) to weld the two uppermost weldments.

Figure 1



UNACCEPTABLE

Figure 2



ACCEPTABLE

3.5 Certification and Qualification: Certification and qualification requirements specified in this document shall include requirements for conformance with inspection and test criteria for all welding of assemblies, sub-assemblies, and modules and pass the tests specified herein. Recertification and requalification requirements, when applicable, shall conform to the same certification and qualification requirements.

4. PROCESS CONTROL

4.1 To ensure proper control of the welding process, it shall be mandatory that the contractor meet all requirements delineated in this document. In addition, it shall be the responsibility of the contractor's Quality organization to audit continually all requirements of this specification to assure compliance.

4.2 Qualification of Welding Equipment: Prior to the use of welding equipment for production purposes, it shall be qualified as a complete system (Paragraph 4.2.4).

4.2.1 Accuracy of meter : All meter indicators of weld energy used for the welding shall have a full-scale accuracy of ± 2% or better and no reading shall be taken below the 15% zone of the low end of the meter.

4.2.2 Repeatability between machines : Machines of the same equipment model shall exhibit ± 5% repeatability with respect to voltage pulse duration, voltage amplitude, and pulse shape at specified settings.

4.2.3 Within-Machine-Repeatability: Within-machine repeatability shall be ± 5% for any specified setting.

4.2.3.1 The voltage waveform at the Weld-Head shall be measured and adjusted if necessary to attain the required pulse duration and amplitude and type of pulse shape at selected settings.

4.2.3.2 The force at the electrodes shall be accurate and repeatable as specified in Paragraph 3.3.1.2.

4.2.4 Qualification of Welding Machines

4.2.4.1 The Quality Control organization shall specify the ISO weld schedule to be used for Welding Machine qualification. The actual welding machine setting, such as, typical wave shape, amplitude, pulse duration, force and gap shall be recorded on the qualification work sheet prior to and after completion of the qualification test.

4.2.4.2 Amplitude, pulse duration, force, gap and typical wave shape shall meet the requirements of paragraph 3.3.1.

4.2.4.3 During qualification welding, no maintenance or adjustments to the equipment shall be permitted.

4.2.4.4 A minimum sample of 55 weld samples shall be prepared at a specified ISO weld schedule by a qualified welding operator. The weld samples must meet all the visual requirements defined in paragraph 5. Five (5) randomly selected samples must meet the metallurgical requirements defined in Paragraph 5.2. The remaining 50 welds shall be pull tested and meet the statistical requirements of Paragraph 4.9.2.

4.2.5 Records of qualification must carry the following information:

(a) Welding Machine make and serial number.
(b) Class and type of electrodes used during qualification.
(c) Types of materials welded.
(d) Quality Control Engineering approval.
(e) Date of qualification.
(f) Restrictions, if any.
(g) Welding machine settings used.
(h) Welding head serial number.
(i) Visual weld acceptance data.
(j) Duration and amplitude data and type of pulse shape.

4.2.6 The contractor's quality organization shall establish or approve the criteria for qualification of welding machines. These criteria shall include the requirements of this specification as a minimum.

4.3 Qualification of Welding Machine Operators

4.3.5 If an operator fails Qualification, or if Qualification is revoked at any time, the operator shall be retrained and requalified in accordance with the above paragraphs before being permitted to continue production welding.

4.3.5.1 Requalification of an operator shall be required:

(a) If the production supervisor or cognizant Quality Control Agency has evidence that an operator's welding is sub-standard.

(b) If visual inspection results in an abnormal rejection rate of weldments due to an operator's performance or workmanship.

4.3.6 If the operator has not performed parallel gap welding for 30 days or more, she shall prepare daily for a period of not less than five (5) consecutive working days 15 acceptable welds out of 15 attempts manufactured to an approved weld schedule. In addition, she shall weld an acceptable dummy module consisting of 50 welds, all of which shall be acceptable per Para. 5.

4.3.7 The contractor's Quality organization shall establish or approve the criteria for qualification of welding operators. These criteria shall include the requirements of this specification as a minimum. The Quality organization shall have the final approval authority on the eligibility of a candidate for welding operator work.

4.4 Qualification of Inspection Personnel

4.4.1 All Welding Inspectors shall successfully complete both the Operator Training Program and the Inspector Training Program.

4.4.2 The inspector shall demonstrate:

(a) A working knowledge of all inspection criteria and requirements.

(b) The ability to identify a machine setting from a posted weld schedule.

(c) The ability to use 10 x magnification for visual inspection.

(d) Acceptable operation of the pull testing equipment.

(e) The ability to read and understand applicable routing specifications.

4.4.3 The inspector shall inspect, daily for a period of not less than five (5) consecutive working days, 15 welds to demonstrate proficiency in identifying both acceptable and non-acceptable operator performance in accordance with weld defect criteria.

4.7.4.3 "t" Test Comparison of Means: The mean break strength at each of the box points shall be compared with that at the selected schedule by:

$$t = \frac{\bar{X}_s - \bar{X}_B}{\sqrt{\dfrac{N_s \sigma_s^2 + N_B \sigma_B^2}{N_s + N_B - 2} \cdot \dfrac{N_s + N_B}{N_s \times N_B}}} \leq 3$$

4.7.4.4 "F" Test Comparison of Variances: The standard deviation at each of the box points shall be compared with that at the selected schedule by:

$$F = \frac{\sigma_B^2}{\sigma_s^2} \leq 2.4$$

4.7.4.5 ISO Strength studies which fail to meet the statistical requirements of Paragraph 4.7.4.1, 4.7.4.2, 4.7.4.3, or 4.7.4.4 may be accepted as an exceptional or unique condition only after the ISO strength data has been computed, analyzed, and an assignable cause has been derived. It shall be the Quality Control functions responsibility for establishing variation limits from the allowable statistical requirements, and assuring the acceptable weld quantity of the ISO strength study and the weld quality of future products which will utilize this weld schedule.

Documented evidence, such as, metallurigical analysis, material strength and variation studies, and statistical test data, must form part of the ISO strength study data package to substantiate the invokement of this paragraph.

4.7.4.6 Exceptional or unique conditions: At times, welding is performed under exceptional of unique conditions. This may result in the establishment of criteria other than those described herein for standard conditions.

4.8 Methods of Performing Break-Strength Test

4.8.1 180° Peel Test. The 180° Peel Test is illustrated in Figure #3A. The load is applied along the axis of the two members, such that a failure will occur by peeling of the weld. The mode of failure will be a tensile fracture through the weld, or a fracture of the lead adjacent to the weld.

4.8.2 Tensile Shear Test. The Tensile Shear is illustrated in Figure #3B. The load is applied axially along both members. The failure mode will depend on the rigidity of the member.

4.9 Weld Process Control

4.9.1 Maintenance. Maintenance of welding equipment used in production shall be performed by qualified set-up personnel prior to production welding and shall include checks for:

(a) Electrode force and gap setting.

(b) Electrode alignment, positioning and dress.

(c) Voltage and pulse duration.

4.9.2 To verify the continued effectiveness of weld schedule information and welding machine and personnel capabilities, statistical process control techniques shall be developed and implemented for use with production welding activity. $\bar{X}$ and R techniques shall be used. Statistical control data may be derived from the samples as prepared in the following paragraphs. Control limits shall be based on data developed during verification of the selected schedule.

4.9.2.1 At least once per shift, prior to production welding, a minimum of 5 weld-test specimens shall be prepared for each active weld schedule setting.

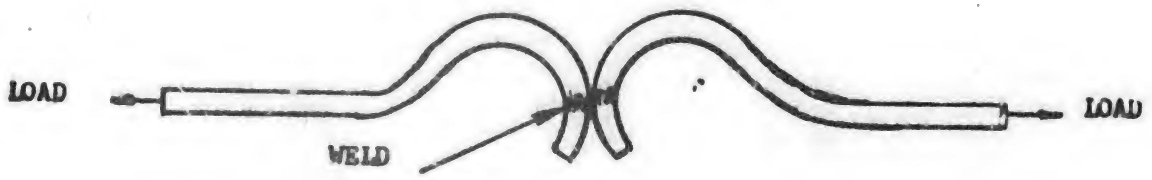


Figure 3A

180° Peel Test

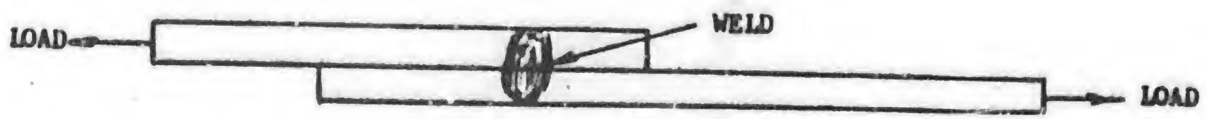


Figure 3B

Tensile Shear Test

4.9.2.2 Weld specimens shall be visually inspected per Para. 5.1 and pull tested to destruction in accordance with Paragraph 4.8.

4.9.2.3 The average pull strength and pull strength range for each sample group shall be utilized for statistical process control purposes.

4.9.2.4 If the sample data, the production operator, or the inspector indicates that the process is out of control, any weldments made since the previous satisfactory sampling shall be considered unsatisfactory until accepted by complete visual reinspection.

4.9.2.5 The Quality organization shall investigate out of control conditions, determine their origin, and initiate the corrective action required.

4.9.3 Calibration of Equipment

4.9.3.1 Welding Machines. Electrical and mechanical accuracy of the equipment shall be recalibrated at least every 60 days by checking all items under Paragraph 4.2.4.

4.9.3.2 Pull Test machines shall be checked for accuracy at intervals not to exceed 60 days.

4.9.3.3 Binocular microscope and electrode force gages shall be calibrated at least every 60 days.

4.9.3.4 All equipment that must be calibrated shall have attached to it a label or tag indicating the date for next calibration.

4.9.3.5 Equipment with calibration past due shall not be used until it has been recalibrated.

4.9.4 A Weld Machine History Record shall be maintained, including a record of all major changes made on each weld machine. Such items as tube and transistor replacements, cable replacements, major overhauls, etc., shall be recorded. All entries shall be clearly dated and initialed.

5. QUALITY ASSURANCE REQUIREMENTS

5.1 Visual Inspection. All production welds shall be inspected visually at 10 x magnification at a work station other than the welding position for the following items: [Paragraph 2.1(a)]

5.1.1 Presence or absence of a weld. If doubt exists as to the presence or absence of a weld, the weld is to be rejected. Under no conditions is a weld to be stressed by any means.

5.1.2 Presence or absence of gross defects. Presence of the following gross defects shall be cause for rejection by the inspector: [Paragraph 2.1 (a).]

(a) Any crack in or fracture of either parent member.

(b) A hole of any size which has been burned through one or both of the parent members.

(c) Any removal of material in the smaller member which reduces the cross sectional area of the member by 20 per cent or more.

(d) Any hole, the internal extent of which is not visually determinable.

(e) Insufficient weld is evident where the leads are insecurely bonded.

5.2 Metallurgical Inspection. Samples from the selected schedule and the four Box-Points shall be examined metallographically at 75 x (or greater) magnification for evidence of satisfactory metallurgical bond. Specimens examined shall conform to the following criteria.

5.2.1 When viewed metallographically, at least 90 per cent of the line of demarcation between the two members shall exhibit a satisfactory metallurgical bond. Two sections shall be examined at 75 x min. as needed to verify the existence of a satisfactory metallurgical bond. One section shall be longitudinal to the weld, the other shall be transverse to the weld.

5.2.2 Any evidence of porosity, cracks, voids or areas of visible separation located along the interface shall constitute a region of unsatisfactory bond. The total linear dimension of all such regions located at the interface shall under no circumstances exceed 10 per cent of the total length of the line of demarcation between the parent members.

5.2.3 Providing that the strength of the bond meets all test requirements and that at least 90% of the bonding interface exhibits a satisfactory bond, the weld shall be deemed satisfactory unless:

(a) Porosity, voids or cracks are observed at locations other than the weld interface with major dimension exceeding 10 per cent of the thickness of the member in which they are located.

(b) In alloy systems where low melting or brittle phases are possible, metallographic examination reveals such phases to be present and so distributed as to be likely to impair the weld performance.

(c) A continuous network of cast or dendritic structure is present and so distributed as to be likely to impair the performance of the weld under cyclically imposed dynamic loads.

APOLLO G&N Specification
ND 1002277
Original Issue Date:
Release Authority: TDRR 22374
Class A Release 9/8/65

PROCESS SPECIFICATION

FOR

APPLICATION OF LIGHT DIFFUSING COATINGS

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page 1 to 6 inclusive.

APPROVALS	NASA/MSC	9/1/65 MIT/IL	S S Kaman 8/26/65	J. Falbrun NAA 8-30
			8-30-65 KIC	

NOT REQUIRED PER LETTER
NASA PP7-65-612

3.2.3 Mechanical paint mixer, Red Devil Paint Conditioner.

3.2.4 Suitable fixtures, trays, racks, etc. for proper handling of the work load.

3.2.5 Zahn Cup No. 2.

3.2.6 Sable hair brush for touch-up purposes only.

3.2.7 Equipment to measure the thickness of the coating such as Dermitron, Magne-Gage or Dermascope.

3.3 Storage stability

3.3.1 Each component shall have a shelf life of at least 12 months when stored in closed containers at a maximum ambient temperature of 95°F (35°C).

3.3.2 Any material which has exceeded the expiration date marked on the container by the manufacturer shall not be used.

3.4 Preparation of coating material

3.4.1 Thoroughly agitate the base resin, component No. 1 of 1012543, in its original container using a mechanical paint mixer or shaker.

3.4.2 Add one volume of the converter-catalyst, component No. 2 of 1012543 to three volumes of the base resin, component No. 1 of 1012543, and mix thoroughly on a mechanical paint mixer or shaker.

3.4.2.1 The visocity of the mixed coating material shall be a maximum of 34 seconds measured with a No. 2 Zahn Cup.

3.4.3 If siphon spray equipment is used, reduce (thin) the mixed coating material up to 10% by volume with Xylene conforming to TT-X-916.

3.4.3.1 The viscosity of the Xylene reduced (thinned) mixed coating shall be a maximum of 24 seconds measured with a No. 2 Zahn Cup.

3.4.4 If the mixed-coating material (3.4.2) or the reduced (thinned) mixed coating material (3.4.3) fails to meet the viscosity requirements indicated in 3.4.2.1 and 3.4.3.1, the prepared coating material shall not be used and shall be discarded. In addition, the containers and the contents from which the coating material was prepared shall also be discarded.

APOLLO G&N Specification
ND1002279
Original Issue Date: 9/14/65
Release Authority: TDRR 22449
Class A Release

PROCESS SPECIFICATION

APPLICATION OF EPOXY PAINT

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page 1 to 5 inclusive.

APPROVALS	NASA/MSC	14 Sep 65 MIT/IL	W. Sutherland ACSP

OT REQUIRED PER LETTER
ASA PP7-65-612

1. SCOPE

1.1 PURPOSE. This specification establishes the process requirements for the application of epoxy paint.

1.2 CLASSIFICATION. The requirements for the process covered by this specification shall be designated as ND1002279-001. This shall include all requirements specified in Sections 1 through 6 of this specification.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of invitation for bids form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

TT-X-916	Xylene (For use in organic coatings)

Military

MIL-T-19588	Toluene-Methyl Isobutyl Ketone Mixture

DRAWINGS

APOLLO G&N

1008809	Paint, Epoxy
1010992	Primer Coating, Epoxy Polyamide Chemical and Solvent Resistant

PUBLICATIONS

NASA

NPC 200-2	NASA Quality Publication, Quality Program for Space System Contractors

3. REQUIREMENTS

3.1 MATERIAL. The coating system covered by this process shall consist of a two component epoxy primer conforming to the requirements specified on Drawing 1010992, and a two component epoxy paint conforming to the requirements specified on Drawing 1008809.

3.2 RESTRICTIONS. Unless otherwise specified on the applicable drawing, the finish shall be omitted from surfaces having a total dimensional tolerance of less than 0.001 inch, from inside cup or box shaped parts, and from all tapped and pin holes.

3.3 PRETREATMENT. Prior to the application of the coating, the parts to be finished shall be treated as specified on the applicable drawing. When no pretreatment is specified, the parts shall be pretreated as follows with the exception that nonmetallic parts shall receive no pretreatment other than cleaning.

3.3.1 Cleaning. Where surface contamination is inherent in the fabrication of the part or assembly, the contaminants shall be removed with a solvent or cleaning agent which is compatible with the material to be coated. Care shall be exercised in the handling of pretreated parts to prevent surface contamination due to fingerprints, oils, greases, release agents, moisture, dust or other foreign material which would affect the adherence or appearance of the coating.

3.3.2 Surface Roughening. The surfaces of ferrous parts (including corrosion resistant steel) and nickel plated parts shall be vapor blasted after cleaning to produce a uniform matte appearance. The surfaces of the parts shall be given a water spray rinse to remove all traces of blast grit, then dried to remove moisture.

3.4 PRIMING. Unless otherwise specified, all surfaces to be finished shall receive a primer coat prior to the application of a top coat of epoxy paint.

3.4.1 Preparation. Prior to blending the two components together, the components shall be individually stirred and have a temperature of 65° to 95°F. After the individual stirring, equal volumes of the components shall be blended together to form the primer. When thinning to a spray consistency is desired, a thinner conforming to the requirements of Specification MIL-T-19588 or a thinner consisting of equal volumes of methyl-isobutyl-ketone and toluol shall be mixed into the blended primer. The primer shall then be allowed to stand for a minimum of 1 hour at room temperature before use.

3.4.2 Application. The primer shall be used within 8 hours after mixing and shall be applied in one wet pass to a dry film thickness of 0.3 to 0.7 mil.

3.4.3 Curing. Unless otherwise specified, the primer shall be allowed to air dry for a minimum of 1 hour before applying the top coat of epoxy paint.

3.5 PAINTING

3.5.1 Preparation. Prior to blending the two components together, the components shall be individually stirred. After stirring, the two components shall be blended together in the ratio of 1 part by volume of part B (catalyst) to 2 parts by volume of part A (resin). When thinning to a spray consistency is desired, xylene, which conforms to the requirements of Specification TT-X-916, shall be mixed into the blended paint. The paint shall then be allowed to stand at room temperature for a minimum of 1 hour before use.

3.5.2 Application. The mixed paint shall be used within 8 hours after mixing and shall be applied over the primed surfaces to a dry film thickness of 1 to 1.5 mil, unless otherwise specified.

3.5.3 Curing. The applied film of paint shall be allowed to air dry a minimum of 30 minutes before applying a force cure (a cure at a temperature other than room temperature). The force cure schedule shall be in accordance with Table I unless otherwise specified on the applicable drawing or if the underlying substrate is a nonmetallic material.

3.5.3.1 Nonmetallic Materials. The force cure of nonmetallic materials shall employ a temperature schedule which is compatible with the underlaying substrate and may vary from the cure schedule specified in Table I as long as a satisfactory finish is obtained.

TABLE I

CURING SCHEDULE

CURE TEMPERATURE (°F)	TIME (Min)
150 ± 5	20 minutes
140 ± 5	35 minutes
130 ± 5	60 minutes
120 ± 5	120 minutes
Room Temp	8 hours

3.6 CURED FILM PROPERTIES. The properties of the cured paint shall conform to the requirements of Drawing 1008809 when tested as specified therein.

3.7 WORKMANSHIP. The primer and paint shall be smooth and uniform in appearance, free from sags, voids or other irregularities which would not reflect a good finish. Irregularities in the applied film, such as dirt, lint, small runs, pits and metal defects not completely hidden by the applied paint, shall be eliminated by using proper equipment, processes and application techniques.

4. QUALITY ASSURANCE PROVISIONS

4.1 PROCESS AND QUALITY CONTROL. The processor shall maintain sufficient process and quality control to assure that the requirements of this specification are met in accordance with the provisions of Publication NPC 200-2.

5. PREPARATION FOR DELIVERY. This section is not applicable to this specification.

6. NOTES

6.1 INTENDED USE. This process is intended for use in the application of epoxy paint on the APOLLO Guidance and Control Ground Support and Airborne Equipment.

WS:lv

(Copies of specifications, standards, drawings, bulletins, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 CONFLICTING REQUIREMENTS. In event of a conflict between requirements, the following order of precedence shall apply. The contractor shall also notify MIT/IL APOLLO Management of the conflict.

a. The contract
b. This specification
c. Documents listed in this section

3. PROCEDURE

3.1 SURFACE PREPARATION. Where surface contamination is inherent in the fabrication of the part or assembly, the contaminants shall be removed with a solvent or cleaning agent which is compatible with the surface to be coated. Preferred solvent and cleaner materials are methyl ethyl ketone, per Specification TT-M-261 or Freon TF per Specification BB-F-671. Care shall be exercised in the handling of cleaned parts to prevent subsequent surface contamination due to fingerprints, oils, greases, release agents, moisture, dust or other foreign material which would affect the adherence or appearance of the coating.

3.2 MATERIAL. The coating system shall consist of a 2 component epoxy system conforming to the requirements of Drawings 1010657 and 1010686 to which aluminum flake conforming to Specification TT-P-320 Type I, Class A has been added.

3.3 MIXING. The coating shall be mixed in accordance with the following formula:

Ratio By Weight

1010657	Eccobond 45 clear = 3 parts
1010686	Eccobond Catalyst 15 = 2 parts
TT-T-548	Toluene = 15 parts
TT-P-320	Type I, Class A Aluminum Flake = 4 parts

The resin and catalyst shall be thoroughly mixed by themselves. This mixture is thinned by the addition of toluene. The aluminum flake shall be added to the thinned epoxy system in small increments with continuous stirring. After all materials have been combined, the mixture shall be thoroughly agitated to ensure complete wetting and uniform dispersion of the aluminum flake.

3.3.1 Pot Life. The pot life of the mixed system shall be 2 hours maximum at room temperature.

3.4 APPLICATION. - The following technique shall be used to obtain the desired coating:

a. The method of application shall be by spray only, as this system does not lend itself to brushing.

b. Application pressure shall be 40±5 psi. Excessive spray pressure results in balling up of the aluminum flake and prevents leafing.

c. A minimum dry film thickness of 0.0015" is required to obtain the required emissivity.

1. SCOPE

1.1 PURPOSE. This specification describes the process for the formulation and application of a low emissivity coating to anodized aluminum and magnesium.

1.2 CLASSIFICATION. The requirements for the process covered by this specification shall be designated as ND1002289-001. This shall include all requirements specified in Sections 1 through 6 of this specification.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, Military Standards and Specifications shall be the issue in effect on the date of request for proposal or invitation to bid.

SPECIFICATIONS

Federal

BB-F-671	Freon Gas, Compressed (Chlorofluoro Hydro-carbons)
TT-M-261	Methyl Ethyl Ketone
TT-P-320	Pigment, Aluminum, for Paint
TT-T-548	Toluene, Technical

DRAWINGS

NASA

1010657	Epoxy Resin (Clear)
1010686	Catalyst
1010992	Epoxy Primer Coating

PUBLICATIONS

NASA

NPC 200-2	NASA Quality Publication, Quality Program for Space System Contractors

3.4 APPLICATION. The following technique shall be used to obtain the desired coating:

a. The method of application shall be by spray only, as this system does not lend itself to brushing.

b. Application pressure shall be 40±5 psi. Excessive spray pressure results in balling up of the aluminum flake and prevents leafing.

c. A minimum dry film thickness of 0.0015" is required to obtain the required emissivity.

d. Continuous agitation during spray is required to keep the pigment well dispersed.

e. The finish shall be applied in multiple coats, allowing 20 minutes minimum flash-off time between coats.

f. Care shall be exercised during and after the application of the finish to prevent dirt, dust, and other particles from contaminating the surface. This finish is highly susceptible to fingerprinting, smudging, etc., and finished parts shall therefore be handled using finger cots and other protective handling devices.

3.5 CURE. The applied coating shall be air dried for 30 minutes minimum. To ensure that optimum properties of the finish are obtained, the air-dried coating shall be followed by a force cure of 2 hours minimum at 150°F.

3.6 TOUCH-UP. Damaged or bare areas shall be touched-up by spray or other suitable means of application in accordance with all requirements of this specification.

3.7 WORKMANSHIP. The coating shall be smooth, bright and uniform in appearance, free from sags, voids or other irregularities which would affect the emissivity. The coating shall show no signs of balling or delamination which would result in a rough matte finish rather than a bright shiny one. The coating shall be free of included dust or other particles which would affect the emissivity.

APOLLO G&N Specification
ND1002289 D
Original Issue Date: 4 JAN 1966
Release Authority: TDRR 25006
Class A Release
CODE IDENT. NO. 99974

PROCESS SPECIFICATION

LOW EMISSIVITY COATING

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				AC	NASA
6/1/66	A	29194	2, 4, 5 EDG/AC	MGM	----
7/1/66	B	29904	5 EDG/AC	MGM	
9/9/66	C	31141	2, 3, 5, 6 Was 6 pages now 7 EDG/AC	EA	ACM
8/31/67	D	34501	6 EDG/AC	MGM EA	---

This specification consists of page 1 to 7 inclusive.

APPROVALS	A. C. METZGER NASA/MSC	A. Levenson 12/28/65 MIT/IL	V. Pagliaro	W. Sutherland AC

d. Parts shall be cured in accordance with the following cure schedule:

(1) The area repaired shall be cured 30 hrs min at 135° ±5°F.

3.7 TOUCH-UP AT FIELD SITES ONLY

a. Clean the area to be repaired with isopropyl alcohol, distilled water, a second alcohol rinse, and a final Freon T. F. rinse.

b. Mix the paint as follows:

1010657 - Epoxy Resin - 6 PBW
1010686 - Catalyst - 4 PBW
TT-P-320 - Type I, Class A Aluminum Flakes - 1 PBW
The resin, catalyst, and aluminum shall be thoroughly mixed and then brushed on the appropriate areas.

c. Parts shall be cured at room temperature.

3.8 WORKMANSHIP. The coating shall be smooth, bright and uniform in appearance, free from sags, voids or other irregularities which would affect the emissivity. The coating shall show no signs of balling or delamination which would result in a rough matte finish rather than a bright shiny one. The coating shall be free of included dust or other particles which would affect the emissivity.

PROCESS FOR ENCAPSULATING WITH SLOW REACTING POLYURETHANE FOAM

1. SCOPE

1.1 This specification defines the procedure for encapsulation of Tray A, Tray B and DSKY, only, with a slow reacting polyurethane foam in order to protect the components from mechanical shock and vibration.

1.2 The foam system in this specification free foams to a density of 6 pounds nominal per cubic foot.

1.3 The low viscosity of the foam system and the fact that foaming will not commence up to four minutes after mixing at room temperature makes this system suitable for encapsulating large units having recesses otherwise difficult to reach for the conventional fast reacting polyurethane foams.

2. APPLICABLE DOCUMENTS

2.1 The following documents form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

TT-M-261	Methyl - Ethyl - Ketone
BB-F-671	Freon T.F.

DRAWINGS

NASA

1006396	Resin, Urethane Foam
ND 1002004	Epoxy Bonding

APOLLO G&N Specification
ND 1002295
Original Issue Date: 5-11-66
Release Authority: TDRR 28745
Class **Release**

PROCESS FOR
ENCAPSULATING WITH SLOW REACTING POLYURETHANE FOAM

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
Ⓜ 8/18/66	A	30657	1, 2, 3, 4, 5	AMG FG	AMG FG
Ⓜ 4/20/67	B	33644	1,3,4,5,6	AMG FG	AMG FG
Ⓜ 8/17/67	C	34358	1, 3, 4, 5, 6	AMG FG	AMG FG

This specification consists of pages 1 to 6 inclusive.

APPROVALS	A. C. METZGER **NASA/MSC**	EC Hall 5/11/66 **MIT/IL**	3/14/66 3/15/66 RAY 21 Mar 66

3. REQUIREMENTS

3.1 Cleaning

3.1.1 Surfaces to be covered or contacted by the foam shall be clean and free of grease, oil, dirt, or other contamination which might adversely affect the adhesion of the foam. Use Freon T.F. or Ethyl Alcohol.

3.2 Mold Preparation

3.2.1 If used, tooling molds shall be cleaned by mechanical methods or chemically with solvent such as methyl - ethyl - ketone. After cleaning, the molds shall then be coated with a fluorocarbon base mold release agent which in no way shall have a deleterious affect on the resin system before, during, or after curing and which shall allow releasing cured foam from the mold surface without damage to the unit or foam.

3.2.2 The mold, assembly to be potted, and all associated tools (containers, & syringes, etc.) shall be kept in an environment in which the temperature is maintained at 81°F ± 6°F for a minimum of 4 hours prior to encapsulation except as noted in Para 3.6.1.A and 3.6.2.A.

3.3 Formulation of Materials

3.3.1 The following formulation of materials shall be used.

Resin Component per SCD 1006396-001	100 parts by wt
Curing Agent per SCD 1006396-002	90 parts by wt

3.4 AMOUNT OF FOAM REQUIRED

3.4.1 For free foam applications on DSKY, the estimated weight of foam required shall be equal to the density in grams per cubic inch multiplied by the volume "V" in cubic inches or 1.58 x V $\mathbf{IN.}^3$.

NOTE: The free foam density of the foam is 6 pounds per cubic foot nominal which converts to 1.58 grams per cubic inch.

3.4.2 For free foam applications on Tray A, the estimated weight of foam required shall be approximately equal to twice the density in GM/IN^3 multiplied by the volume V in IN^3 or 3.0 X V IN^3.

3.4.3 For free foam applications on Tray B, the estimated weight of foam required shall be equal to the volume in IN^3 multiplied by 2.0.

3.4.4 For closed mold applications, the maximum weight of foam required shall be equal to twice the weight required for free foam applications i.e. 3.16xV grams. The minimum weight required shall be the same as for free foam applications i.e. 1.58 V grams.

3.5 Mixing

3.5.1 Add the required amount of curing agent to resin component at 81°F ± 6°F in the proportions specified in paragraph 3.3.1. Stir thoroughly by hand using a tongue depressor or equivalent for 30 ± 10 seconds.

3.6 Encapsulating. A two stage filling is used to prevent the foam from seeping out at unsealed joints; i.e. around Malco pins.

3.6.1 First Stage

3.6.1.A The mold and the Assy to be potted may be preheated to 110°F max.

3.6.1.1 Using a syringe or equivalent, fill area around Malco pins with enough mixture for sealing as determined in 3.4.1, 3.4.2 or 3.4.3.

3.6.1.2 Cure the mixture by allowing it to free foam at 175°F ± 5°F for 2 hours minimum. Application of mold covers is permitted to prevent over potting.

3.6.1.3 Allow unit to cool to 75°F to 110°F.

3.6.1.4 Any voids where Malco insulators are still visible are to be filled using this same free foam procedure.

3.6.2 Second Stage

3.6.2.A The mold and the Assy to be potted may be preheated to 140°F max.

3.6.2.1 Pour the required amount of mixture as determined in 3.4.4 into the remaining cavity, spreading the mixture uniformly over the entire area, and close the mold. The time available for pouring and closing the mold will be approximately 4 minutes from completion of stirring per par. 3.5.1.

3.6.2.2 Cure the unit at 175°F ± 5°F for 2 hours minimum.

3.6.2.3 Any voids where wiring is exposed are to be filled per Para. 3.6.2.A, 3.6.2.1 & 3.6.2.2.

4. QUALITY ASSURANCE PROVISIONS

4.1 Visual inspection shall be performed using the naked eye.

4.2 The cured foam shall be rigid, non-tacky, and have the same size and shape as specified by the applicable drawing. Wiring may be visible but must be firmly imbedded in the cured foam. Wires which are visible must be coated with epoxy, .005 min. thk. per ND 1002004 Type V.

4.3 Voids permissible providing wiring is not exposed.

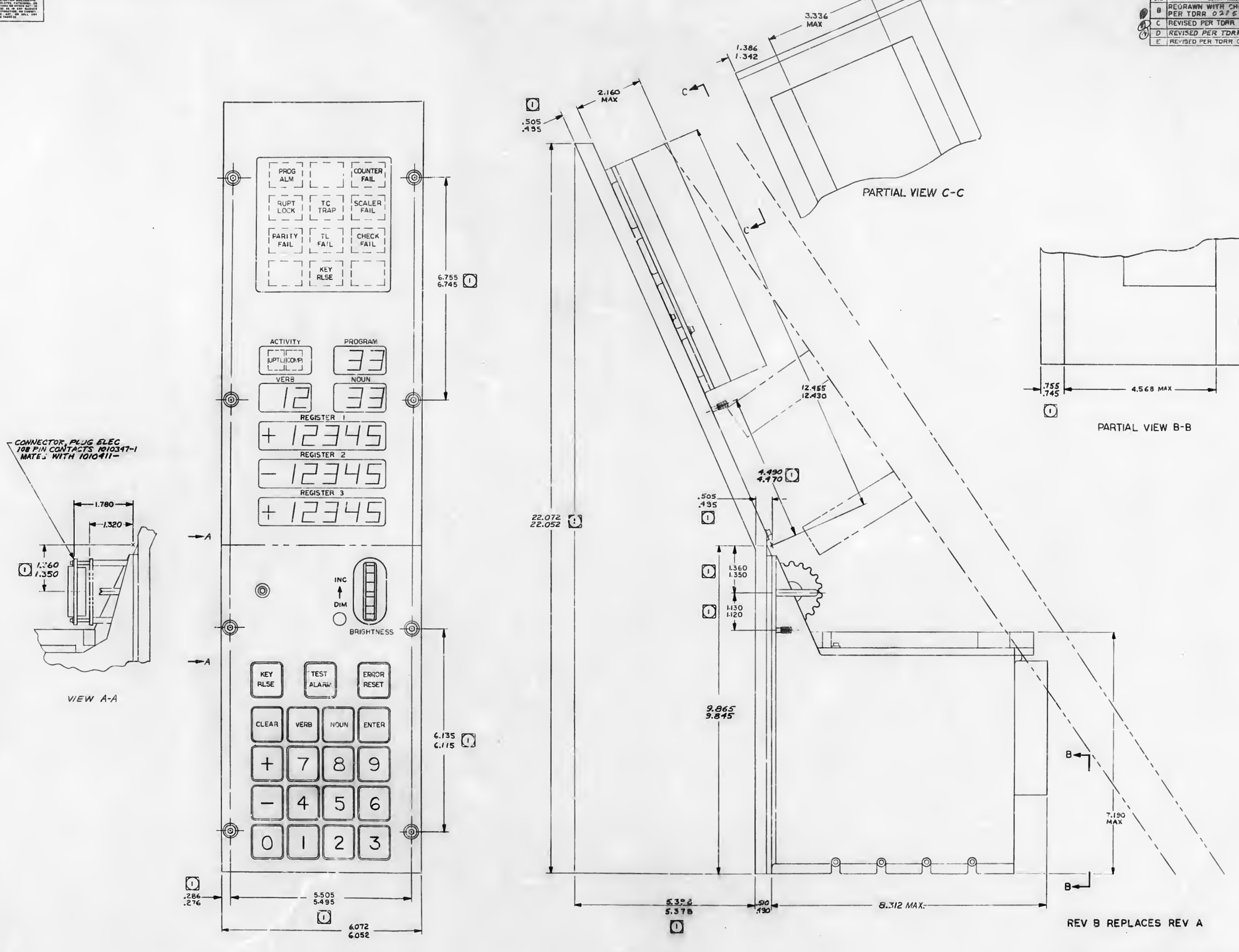
4.4 Qualification of materials. At the start of each 24 hour production period, a check of the materials shall be made regarding their ability to properly encapsulate. Test Method A shall be used as follows:

4.4.1 Test Method A. The materials shall be mixed as specified in paragraph 3.5.1. All associated components (containers, jars, etc.) shall be kept in an environment in which the temperature is maintained at 81°F ± 6°F for a minimum of 4 hours prior to testing. At least thirty five (35) grams shall be mixed. Twenty five (25) grams +0 gram -1 gram of the mixture shall be poured into an eight (8) ounce, wide-mouth, glass jar within sixty (60) seconds after mixing has been completed. (The glass jar shall have nominal inside dimensions: 2.375" dia X 3.125" high). The mixture shall remain stationary and level until the foam has hardened (about 5-10 minutes). Care should be taken to set the glass jar on an insulating surface (foam pad) to reduce the transfer of heat through the glass. After the foam has hardened the dimension from the top of the foam crown to the top of the jar shall be measured. The resultant dimension shall fall within the range: 1.25" to 0.80".

4.4.2 Test Method B. Test specimens shall be prepared by combining the material per paragraph 3.5.1. All associated components (containers, etc.) shall be kept in an environment in which the temperature is maintained at 81°F ± 6°F for a minimum of 4 hours prior to testing. 95 ± 5 grams of this material shall be poured into a 1 pint round metal can approx. dim. 4" high x 3 1/4 dia. and allowed to free blow and cure for a minimum of 1/2 hour.

NOTICE — [illegible]

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REDRAWN WITH CHANGES PER TDRR 02153		DW
C	REVISED PER TDRR 03638		
D	REVISED PER TDRR 04176		
E	REVISED PER TDRR 05179		



REV B REPLACES REV A

Ⓘ DIMENSIONS ARE CONTROLLED BY ICD MH01-01004-116

◐ INDICATES CENTER OF GRAVITY
ESTIMATED WEIGHT—

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LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN R.S. Tracy DATE
CHECKED
APPROVAL
APPROVAL Eldon C Hall
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC DISPLAY
NAV PANEL OUTLINE

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003100
SCALE 1:1
WT
SHEET 1 OF 1

1003100 E

NOTICE — [illegible]

B 1003101

REVISIONS 01749			
SYM	DESCRIPTION	DATE	APPROVAL
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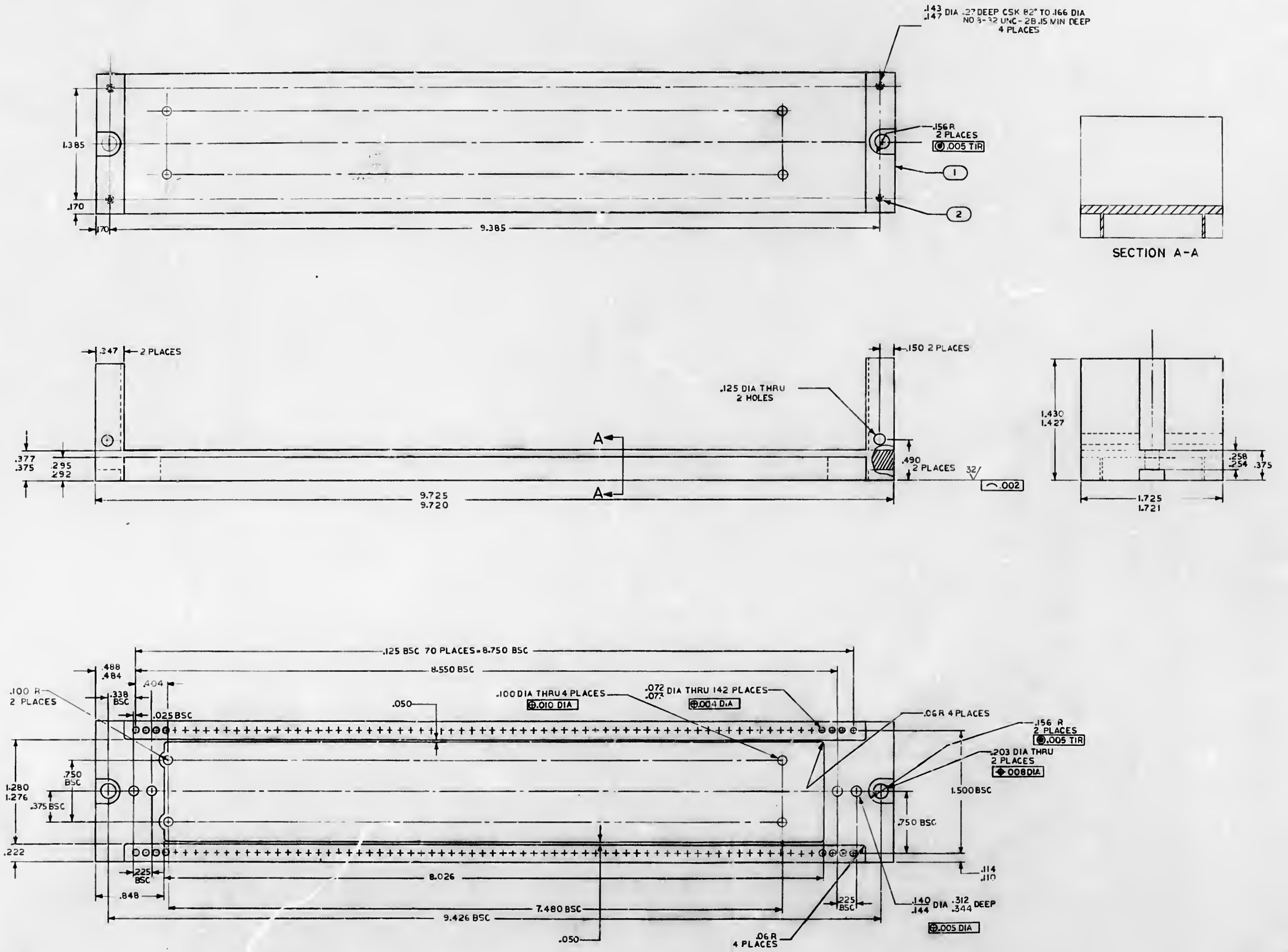
B	REVISED PER TDRR 08411 DR CHK A.P.E.	5/4/64	



NOTES:

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3. FINISH: ANODIZE PER MIL-M-45202, TYPE I, CLASS C
4. ALL SURFACES 125/ UNLESS OTHERWISE SPECIFIED
5. INSTALL FIND NO 2 PER ND 1002121
6. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
7. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII TO BE .005-.020

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1	1003101-1	HEADER, HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003077	

APPLICATION

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TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±3°
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MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT

DRAWN J.F. Welch DATE 6-11-63
CHECKED 12
APPROVAL 26 JUN 63
APPROVAL 6/23/63

NASA APPROVAL 6-26-63
MIT APPROVAL 26 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER, HOUSING
ERASABLE MEMORY MODULE

CODE IDENT NO ——— SIZE E NASA DRAWING NO 1003101

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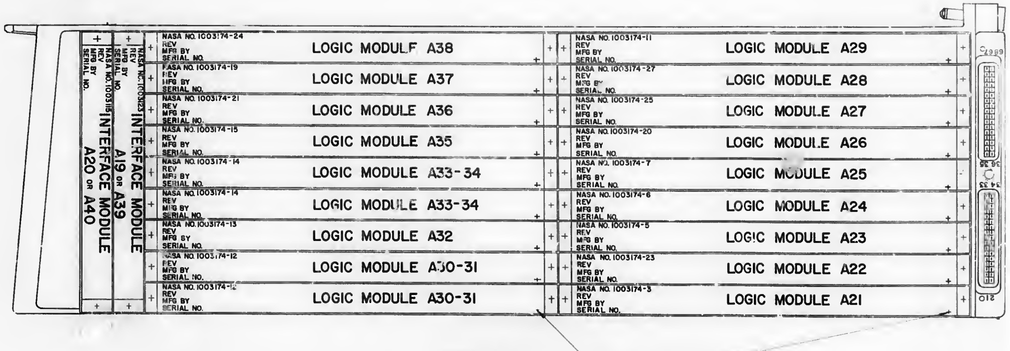

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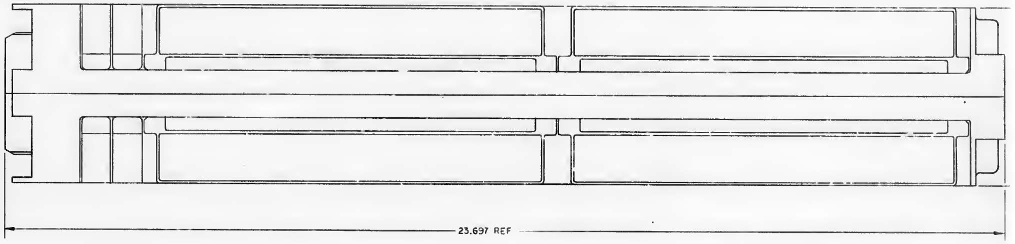
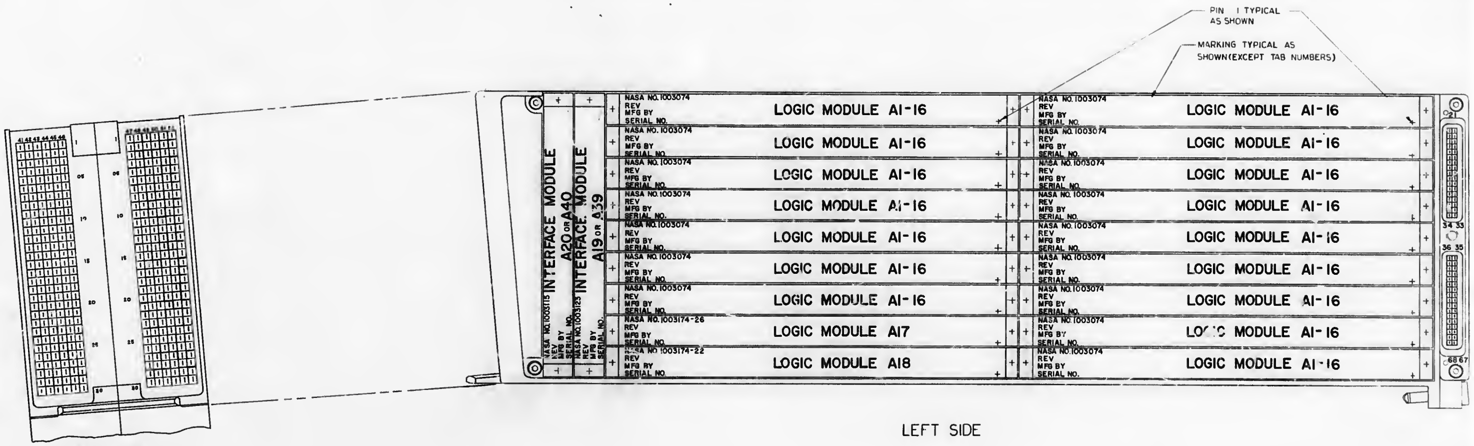
PIN 1 TYPICAL AS SHOWN



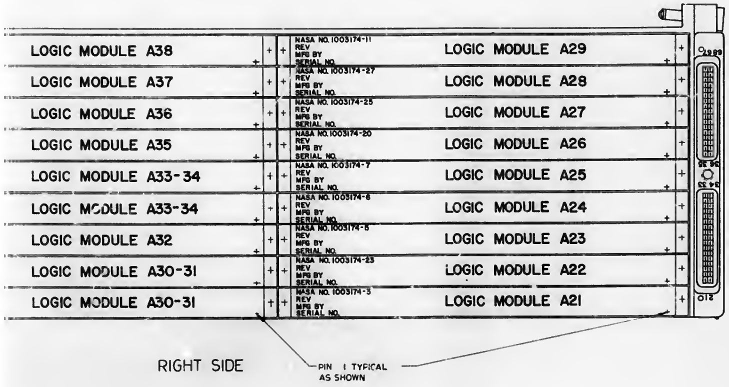


REAR VIEW

LEFT SIDE

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ① DIMENSIONS ARE CONTROLLED BY ICDMH01-01002-116 AND ARE SHOWN HERE FOR REF. ONLY

SYM	REVISIONS 01749 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02193		
B	REVISED PER TDRR 04308	10-30-63	
C	REVISED PER TDRR 05112	12/10/63	
D	REVISED PER TDRR 06143		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LOGIC MODULE A30-31
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LOGIC MODULE A28
LOGIC MODULE A27
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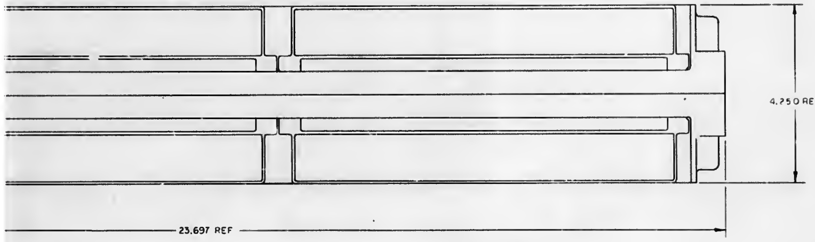
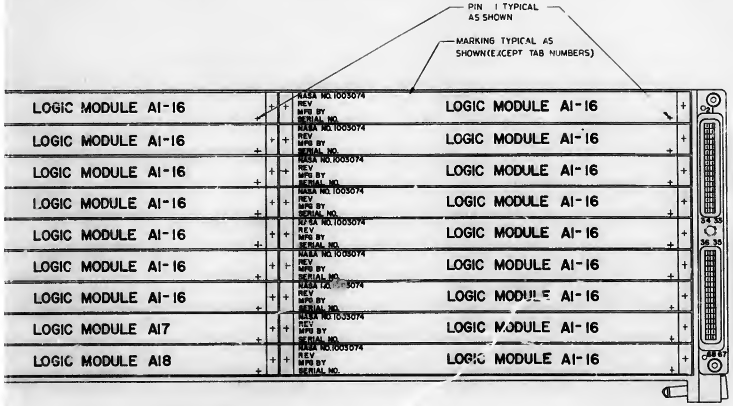
LOGIC MODULE A22
LOGIC MODULE A21
PIN 1 TYPICAL AS SHOWN

RIGHT SIDE





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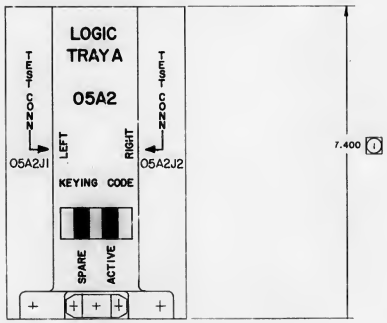

FRONT VIEW

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LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

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TOLERANCES ON
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MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. Machado DATE 6-12-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. [illegible] 6-26-63
MIT APPROVAL [illegible] 26 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY A ASSEMBLY
OUTLINE DRAWING

CODE IDENT NO	SIZE	NASA DRAWING NO
—	J	1003104

SCALE 1/1 WT SHEET 1 OF 1

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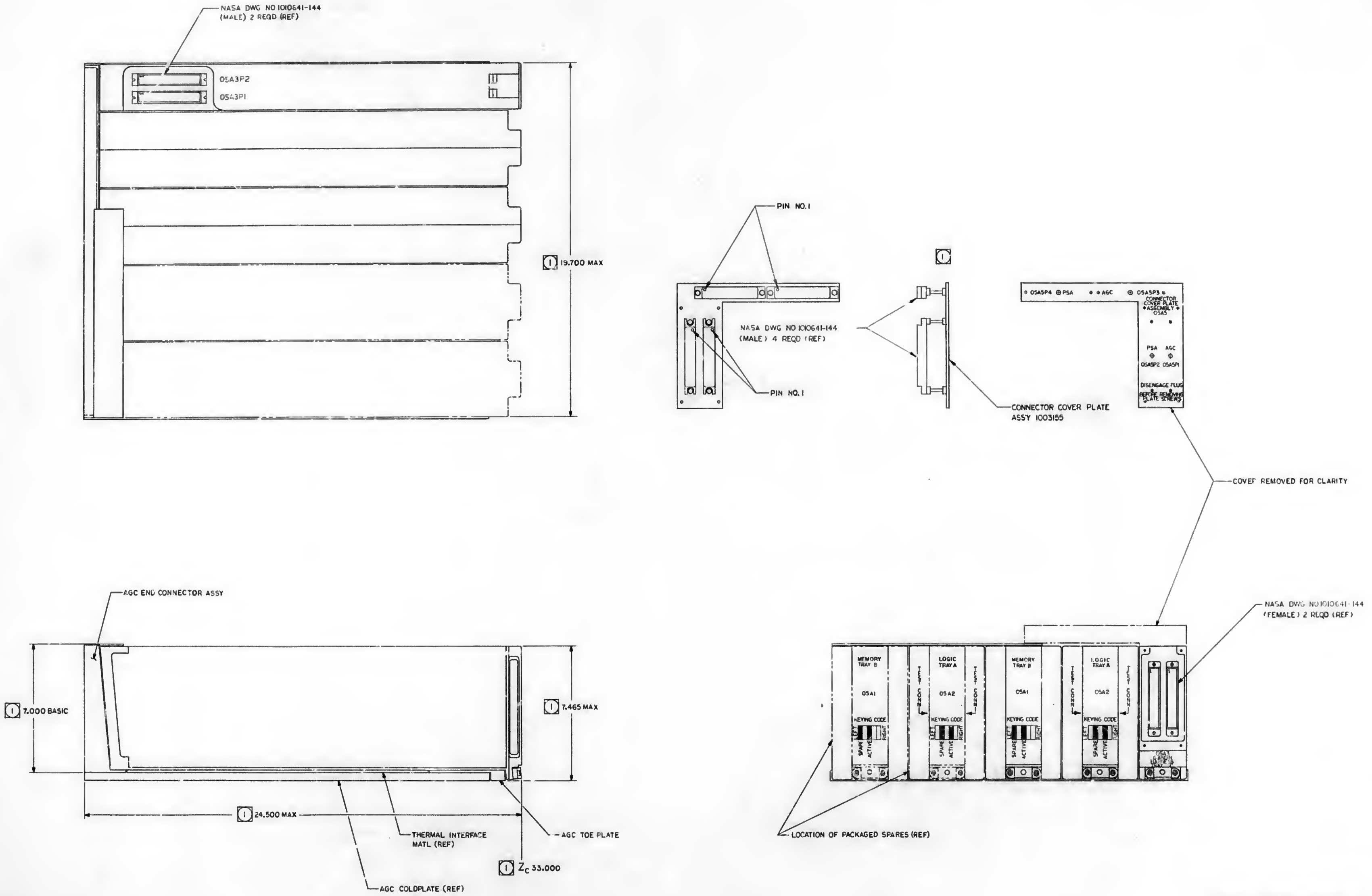
D	REVISED PER TDRR 03638		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PSA
AGC
05A5P3
CONNECTOR COVER PLATE ASSEMBLY 05A5
PSA
AGC
05A5P2
05A5P1
DISENGAGE PLUG BEFORE REMOVING PLATE SCREWS
COVER REMOVED FOR CLARITY
AGC END CONNECTOR ASSY
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$\boxed{1}$ 24.500 MAX
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AGC TOE PLATE
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AGC COLDPLATE (REF)
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TEST CONN
LOGIC TRAY A
05A2
TEST CONN
KEYING CODE
LEFT
RIGHT
SPARE
ACTIVE
05A3
LOCATION OF PACKAGED SPARES (REF)

REV C REPLACES REV B

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. $\boxed{1}$ DIMENSIONS ARE CONTROLLED BY ICD MH01-01002-116 & ARE SHOWN HERE FOR REF ONLY

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

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MATERIAL
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MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Horgan DATE 8-7-63
CHECKED
APPROVAL 19 Aug 63
APPROVAL
NASA APPROVAL Jack Barnard
MIT APPROVAL W Kupfer 19 Aug 63

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AGC ASSEMBLY
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CODE IDENT NO.
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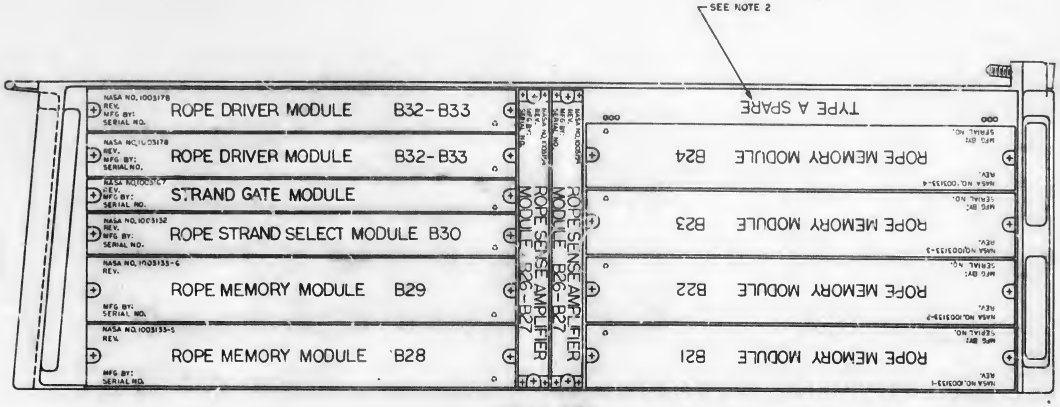
WT
SHEET 1 OF 1

1003105 D



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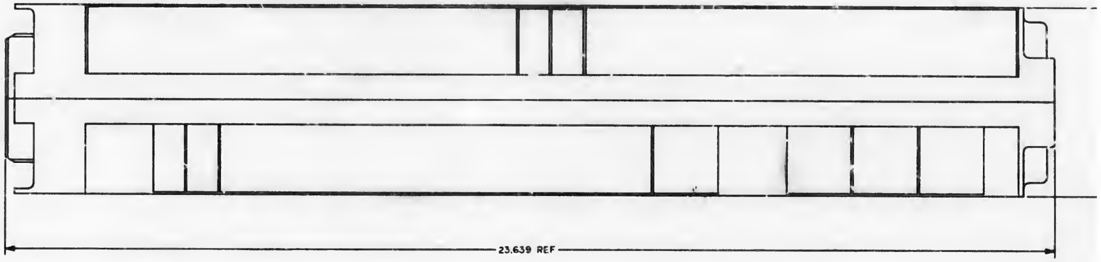

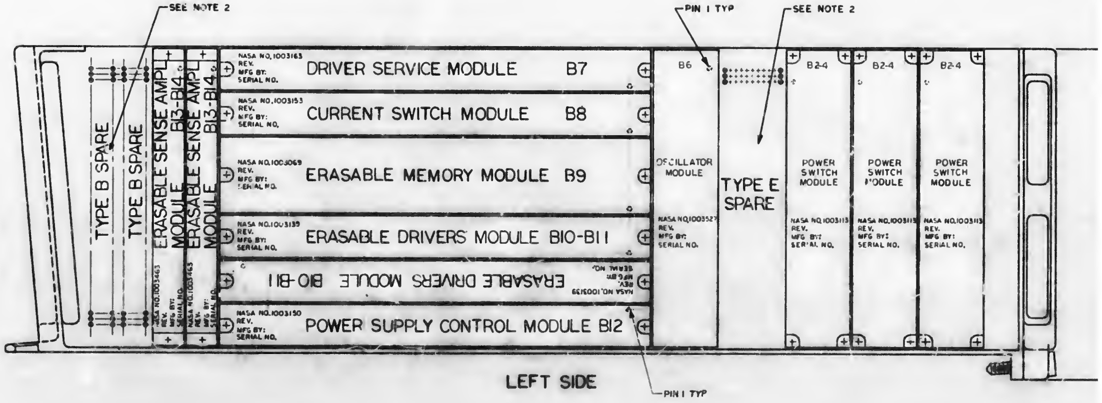

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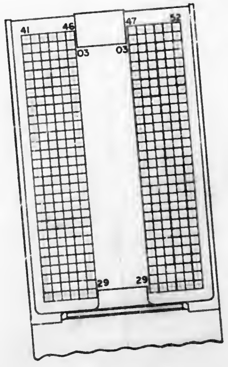
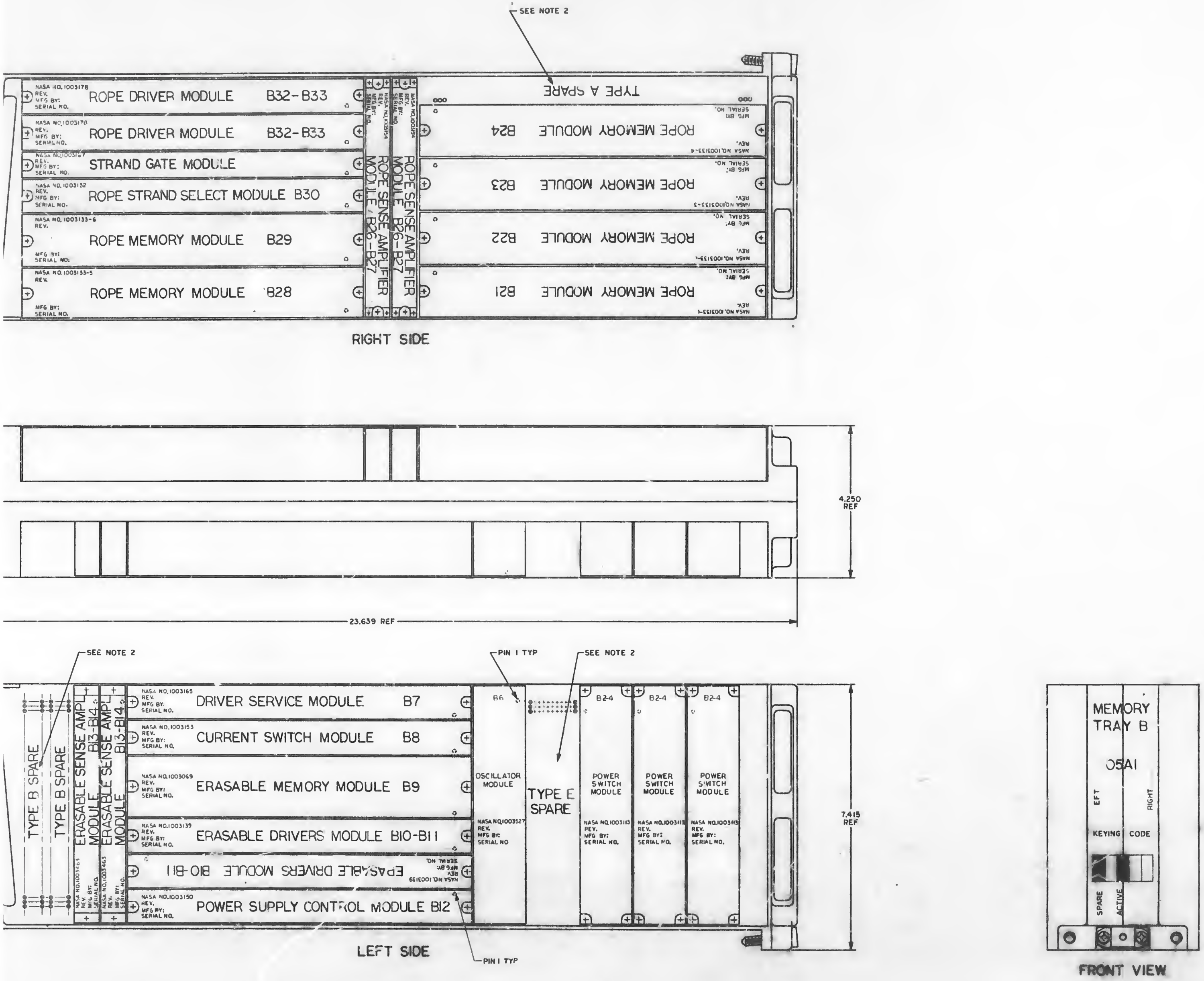


REAR VIEW

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. REF DWG 1003905 COMPUTER MODULE FORM FACTOR CONTROL FOR POSSIBLE INSTALLABLE SPARES

E	1003106		

SYM	DESCRIPTION	DATE	APPROVAL
C	REPLACES REVISION B WITH CHANGE PER TDRR 02621		
D	REVISED PER TDRR 04314	10-9-65	
E	REVISED PER TDRR 10389 DR. , CHK	4/22/69	


SEE NOTE 2
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ROPE DRIVER MODULE B32-B33
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ROPE DRIVER MODULE B32-B33
NASA NO. 1003167 REV. MFG BY: SERIAL NO.
STRAND GATE MODULE
NASA NO. 1003132 REV. MFG BY: SERIAL NO.
ROPE STRAND SELECT MODULE B30
NASA NO. 1003133-6 REV. MFG BY: SERIAL NO.
ROPE MEMORY MODULE B29
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ROPE SENSE AMPLIFIER MODULE B26-B27
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ROPE MEMORY MODULE B22
NASA NO. 1003133-2
ROPE MEMORY MODULE B21
NASA NO. 1003133-1
RIGHT SIDE
4.250 REF
23.639 REF
SEE NOTE 2
PIN 1 TYP
SEE NOTE 2
TYPE B SPARE
TYPE B SPARE
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ERASABLE SENSE AMPL MODULE B13-B14
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NASA NO. 1003153 REV. MFG BY: SERIAL NO.
CURRENT SWITCH MODULE B8
NASA NO. 1003069 REV. MFG BY: SERIAL NO.
ERASABLE MEMORY MODULE B9
NASA NO. 1003139 REV. MFG BY: SERIAL NO.
ERASABLE DRIVERS MODULE B10-B11
NASA NO. 1003139 REV. MFG BY: SERIAL NO.
ERASABLE DRIVERS MODULE B10-B11
NASA NO. 1003150 REV. MFG BY: SERIAL NO.
POWER SUPPLY CONTROL MODULE B12
B6
OSCILLATOR MODULE
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TYPE E SPARE
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POWER SWITCH MODULE
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7.415 REF
LEFT SIDE
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MEMORY TRAY B
05A1
EFT
RIGHT
KEYING CODE
SPARE
ACTIVE
FRONT VIEW

REV C REPLACES REV B

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
FRACTIONS ± -/- DECIMALS ± -/- ANGLES ± -/-
DO NOT SCALE THIS DRAWING
MATERIAL -/-
HEAT TREATMENT -/-
FINAL FINISH -/-

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CAMBRIDGE, MASS

DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
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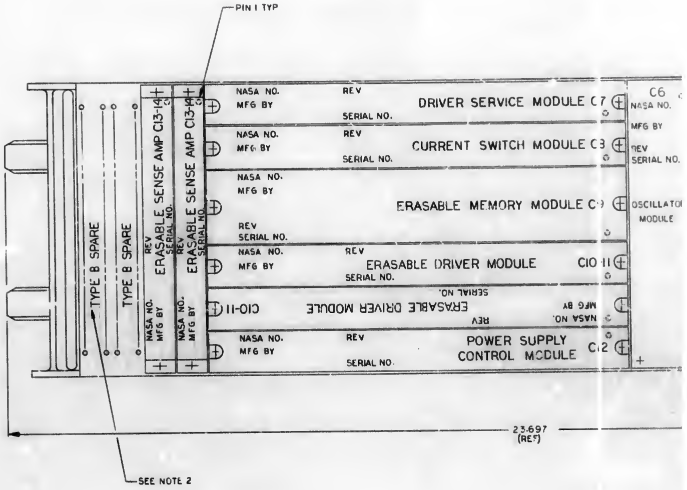
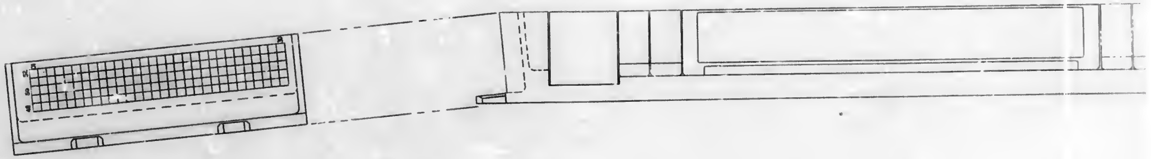
TRAY B ASSY
OUTLINE DRAWING

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1003106
SCALE 1:1
WT
SHEET 1 OF 1


PIN 1 TYP
TYPE B SPARE
TYPE B SPARE
ERASABLE SENSE AMP C13-14
ERASABLE SENSE AMP C13-14
REV
SERIAL NO.
NASA NO.
MFG BY
DRIVER SERVICE MODULE C7
CURRENT SWITCH MODULE C8
ERASABLE MEMORY MODULE C9
ERASABLE DRIVER MODULE C10-11
ERASABLE DRIVER MODULE C10-11
POWER SUPPLY CONTROL MODULE C12
C6
OSCILLATOR MODULE
23.697 (REF)
SEE NOTE 2



REAR VIEW

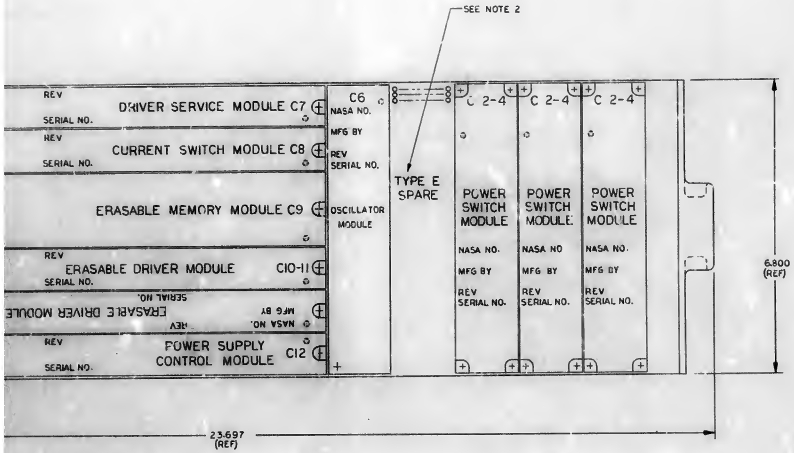
NOTES:

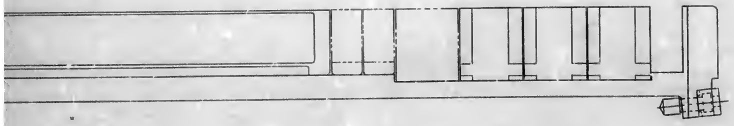
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. REF DWG 1003909 COMPUTER MODULE FORM FACTOR CONTROL FOR POSSIBLE INSTALLABLE SPARES

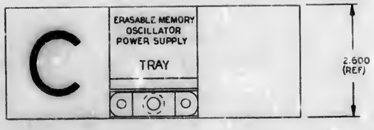
1003107 A

1003107 A

SYM	DESCRIPTION	REVISIONS
A	REVISED PER TDRR	







FRONT VIEW

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± # ANGLES ± #
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MATERIAL
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APPROVAL
APPROVAL
NASA APPROVAL
1-23-66
MIT APPROVAL

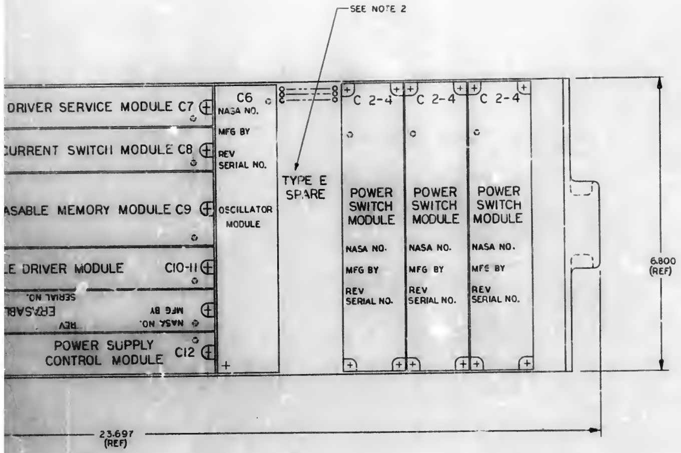
MANNED SPACECRAFT
HOUSTON, TEXAS

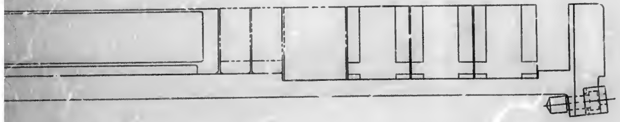
TRAY "C" AS
OUTLINE

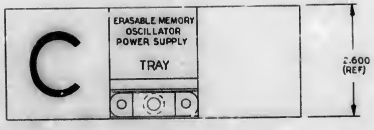
CODE IDENT NO. SIZE NASA
1003
SCALE 1/1 WT

1003107 A

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02202	7-31-63	







FRONT VIEW

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± # ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY | USED ON
APPLICATION

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DRAWN J Brighton DATE 6/19/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 6-26-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY "C" ASSY
OUTLINE DWG

CODE IDENT NO | SIZE | NASA DRAWING NO. 1003107
SCALE 1/1 | WT | SHEET 1 OF 1

1003107 A

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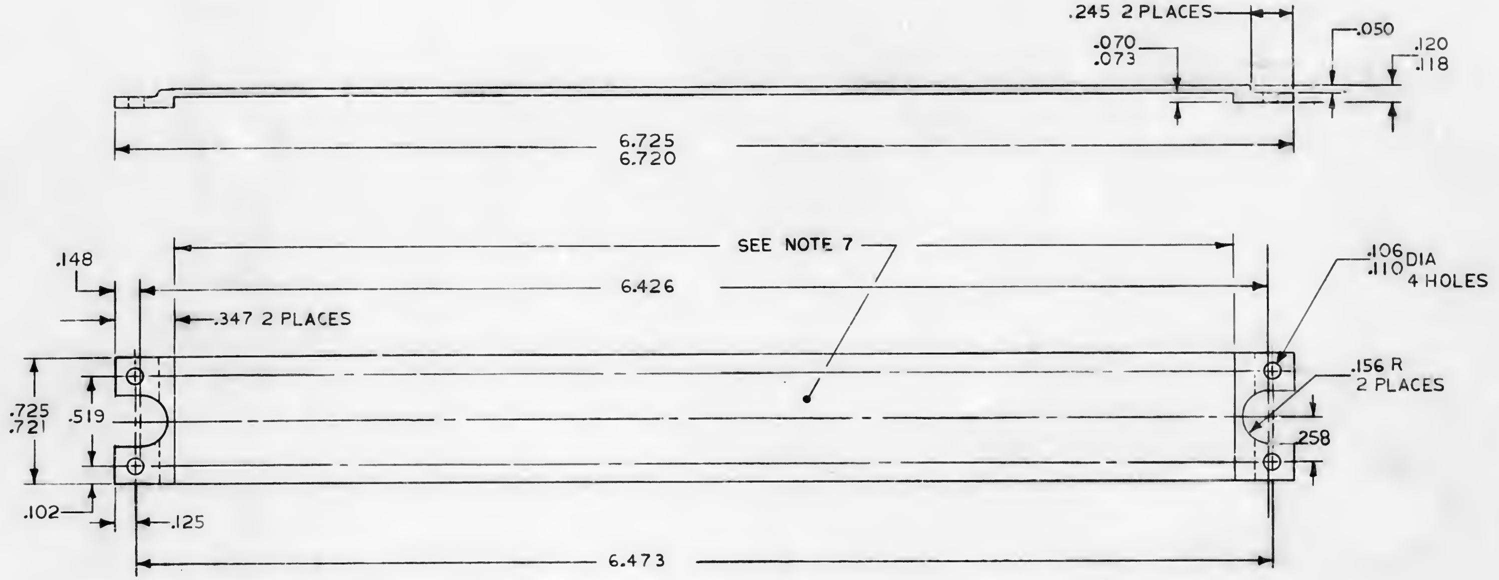
1003108 B

REVISIONS TDRR 02048

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02696	8/21/63	RPK
B	REVISED PER TDRR 10735 DR P. Boudreau CHK J.G.L. RTM	7/23/64	RFB



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAG ALLOY ZK60A-T5 PER QQ-M-31
3. FINISH: ANODIZE PER MIL-M-3171 TYPE IV
4. ALL SURFACES .125√ UNLESS OTHERWISE SPECIFIED
5. REMOVE ALL BURRS AND SHARP EDGES .005-.015
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII TO BE .010 MAX
7. SPRAY COAT INDICATED SURFACE WITH CLEAR EPOXY PER ND1002035, EXCEPT TO .005-.015 DEPTH

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1003463	
1003154	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 3

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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT

DRAWN J.F. Walsh DATE 6/28/63
CHECKED L.P. Kingsbury 26 Jun 63
APPROVAL E.T. Dudgeon
APPROVAL W.B. Turner 7/16/63
NASA APPROVAL W.J. Rhine 7-17-63
MIT APPROVAL 7/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

COVER
SENSE AMPLIFIER MODULE

CODE IDENT NO —
SIZE C
NASA DRAWING NO. 1003108
SCALE 2/1
WT
SHEET 1 OF 1

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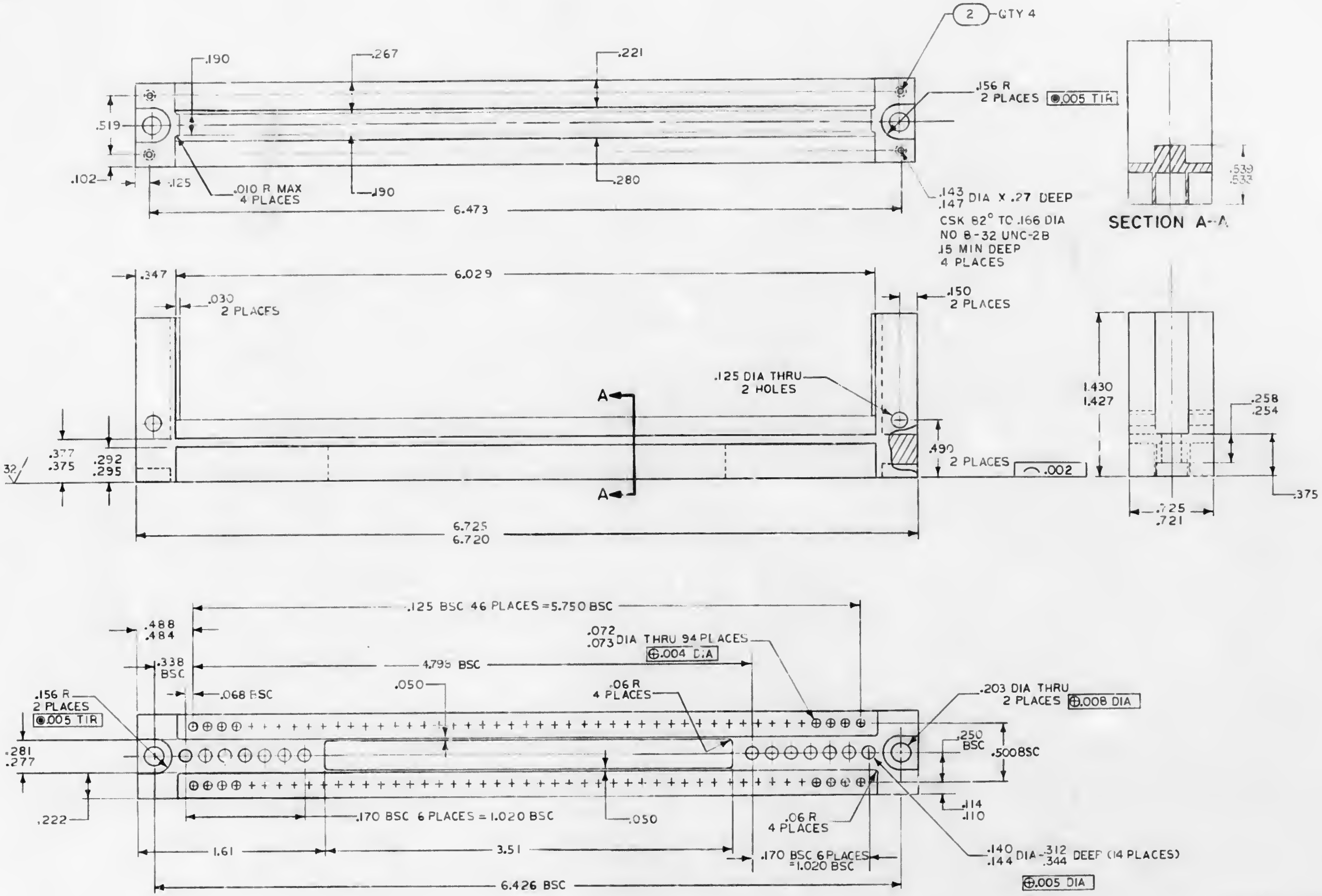
REVISIONS TDRR 02048

SYM	DESCRIPTION	DATE	APPROVAL
A1	REVISE PER TDRR 04317	[illegible]	WR
B	REVISED PER TDRR 05631	7 JAN 64	[illegible]
C	REVISED PER TDRR 08411 DR B Jensen CHK A.P.B. RG	5/7/64	[illegible]



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAG ALLOY ZK60A-T5 PER QQ-M-31
3. FINISH: ANODIZE PER MIL-M-45202, TYPE I, CLASS C
4. ALL SURFACES 125/ UNLESS OTHERWISE SPECIFIED
5. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII TO BE .005/.015
7. INSTALL FIND NO. 2 PER ND1002121

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1000115-1	INSERT, THREADED	2
1	1003109-1	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003148	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT

FINAL FINISH SEE NOTE 3

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO
CONTRACT

DRAWN J.F. Walsh DATE 6/24/63
CHECKED C.P. Kingsbury 26 Jun 63
APPROVAL E.J. Sheppard
APPROVAL W. Sumner 7/16/63

NASA APPROVAL W.J. Rhine 7-17-63

MIT APPROVAL [illegible] 7/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

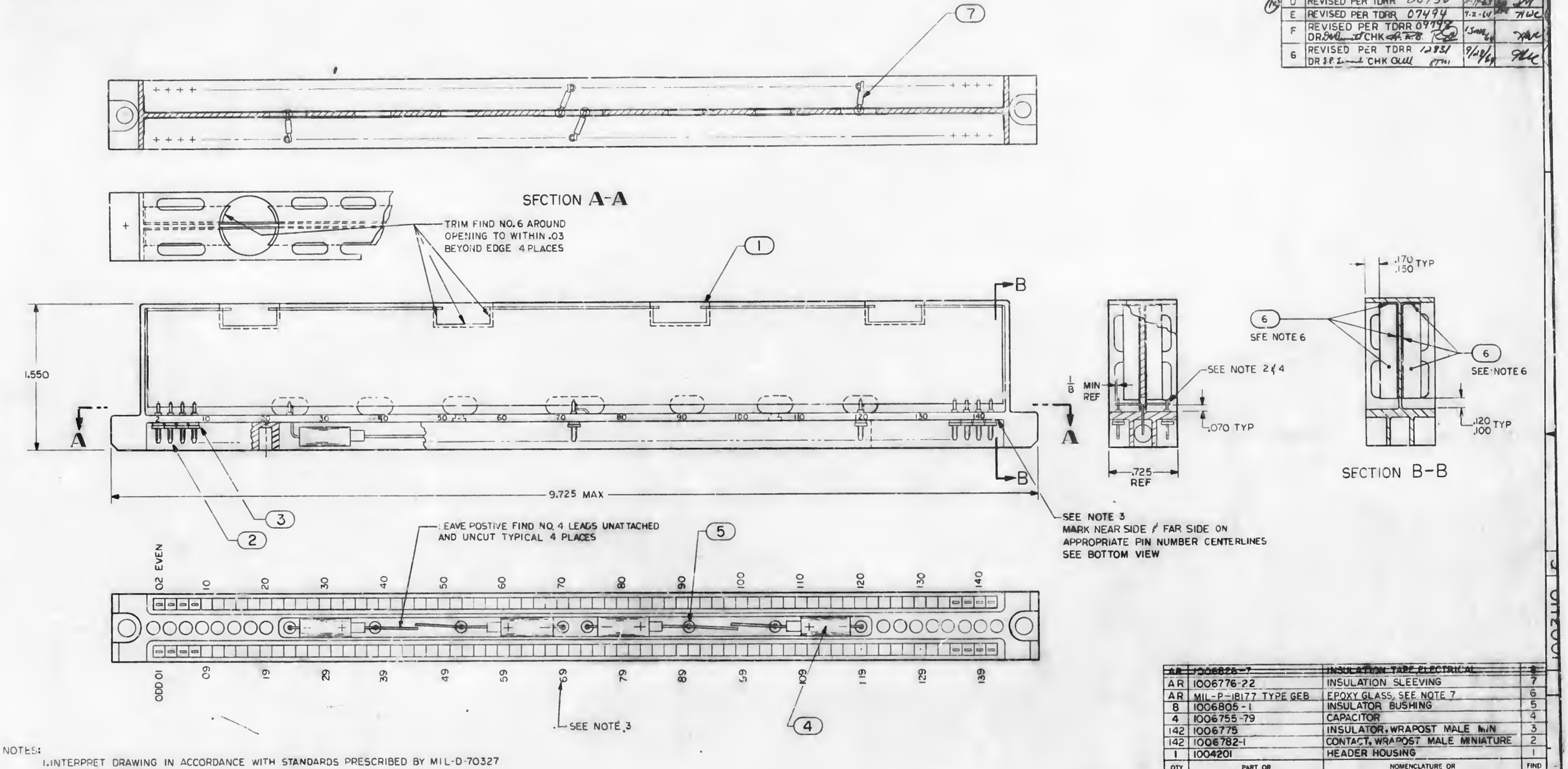
HEADER HOUSING
SENSE AMPLIFIER MODULE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003109
SCALE 2/1
WT
SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 02382

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04011	10-18-63	WK
B	REVISED PER TDRR 04310	10-30-63	[illegible]
C	REVISED PER TDRR 04382	5 Nov	[illegible]
D	REVISED PER TDRR 04750	11-19-63	[illegible]
E	REVISED PER TDRR 07494	4-2-64	HWC
F	REVISED PER TDRR 09798 DR [illegible] CHK R.R.B.	1 June 64	HWC
6	REVISED PER TDRR 12831 DR S.P. [illegible] CHK [illegible]	9/28/64	HWC



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND1002005
3. MARK .040 TO .080 HIGH WHITE CHARACTERS PER ND1002019
4. LEAVE NEGATIVE FIND NO. 4 LEADS 1/8 MIN LONG BEYOND FIND NO. 2 LEADS TO BE CUT AFTER WELDING AT NEXT ASSEMBLY
5. INSTALL FIND NO 2 & 3 PER ND 1002136
6. STAKE FIND NO.6 TO FIND NO 1 PER ND1002004
7. PLASTIC EPOXY GLASS PER MIL-P-18177 TYPE GEB .003±.001 THK

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
~~AR~~	~~1006828-7~~	~~INSULATION TAPE, ELECTRICAL~~	~~8~~
AR	1006776-22	INSULATION SLEEVING	7
AR	MIL-P-18177 TYPE GEB	EPOXY GLASS, SEE NOTE 7	6
8	1006805-1	INSULATOR BUSHING	5
4	1006755-79	CAPACITOR	4
142	1006775	INSULATOR, WRAPOST MALE MIN	3
142	1006782-1	CONTACT, WRAPOST MALE MINIATURE	2
1	1004201	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003174	
1003074	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

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CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN [illegible] DATE 5-16-63
CHECKED [illegible] 27 Jun 63
APPROVAL W.B. Turner 7/30/63
APPROVAL [illegible]
NASA APPROVAL W. J. Kline 7-31-63
MIT APPROVAL [illegible] 7/31/63

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HEADER HOUSING
SUB-ASSEMBLY
MICRO LOGIC MODULE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003110
SCALE 2/1
WT
SHEET 1 of 1

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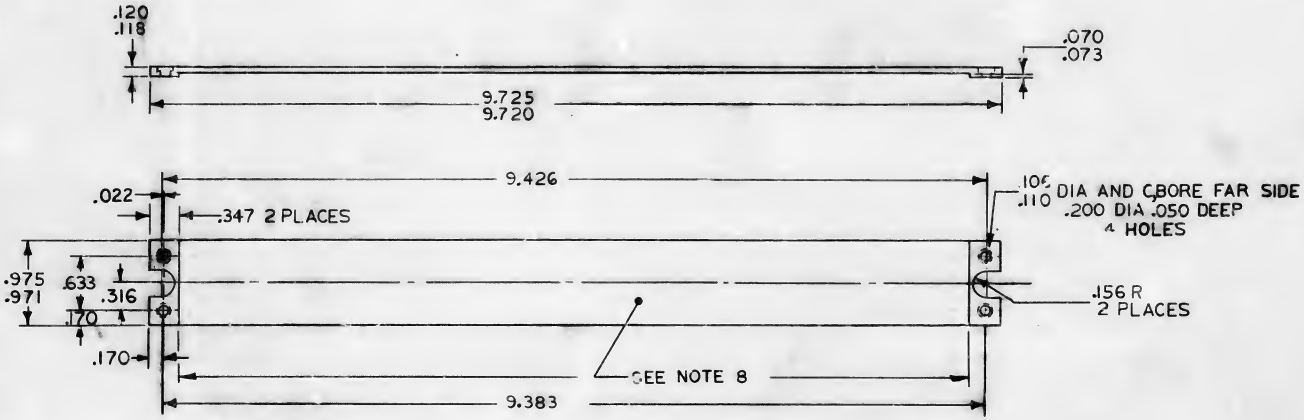
1003112 D

REVISIONS TDRR 02048

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02701	8/21/63	RPK
B	REVISED PER TDRR 03846	10-10-63	
C	REVISED PER TDRR 06028	2/7/64	2/7/64
D	REVISED PER TDRR 10735 DR P.Boudreau fr CHK RTM	7/23/64	RFB



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAG ALLOY ZK60A-T5 PER QQ-M-31
3. FINISH: ANODIZE PER MIL-M-3171 TYPE IV
4. ALL SURFACES .125√ UNLESS OTHERWISE SPECIFIED
5. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII TO BE .010 MAX
7. A.R. DENOTES AS REQUIRED
8. SPRAY COAT INDICATED SURFACE WITH CLEAR EPOXY PER ND1002035, EXCEPT TO .005-.015 DEPTH

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1003165	
1003153	
1003139	
1003178	
1003132	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 3

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DRAWN J.F. DATE 6/14/63
CHECKED 11 Jul 63
APPROVAL
APPROVAL 7/15/63
NASA APPROVAL W.J. 7-17-63
MIT APPROVAL 7/17/63

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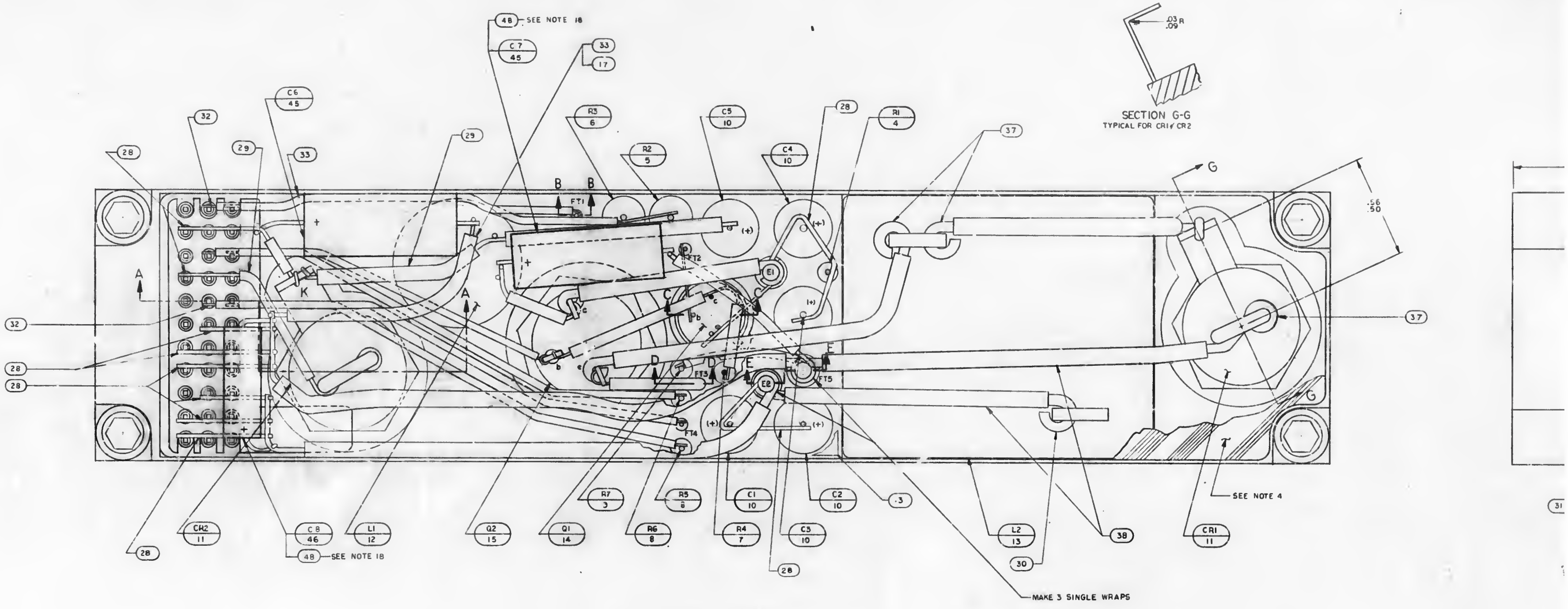
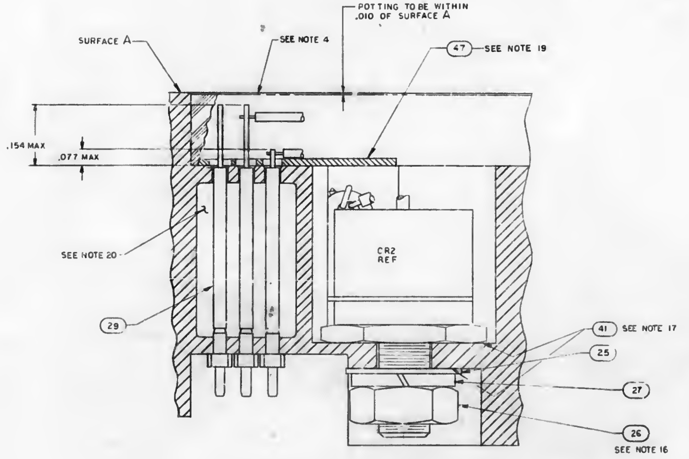
HOUSTON, TEXAS

COVER
HEADER HOUSING

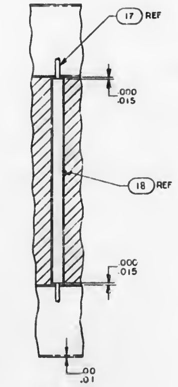
CODE IDENT NO. —— SIZE C NASA DRAWING NO. 1003112
SCALE 1/1 WT SHEET 1 OF 1



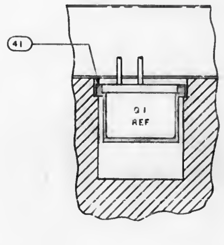
SECTION G-G
TYPICAL FOR CR1 / CR2



SECTION A-A



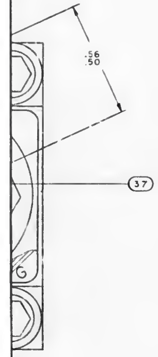
SECTION B-B

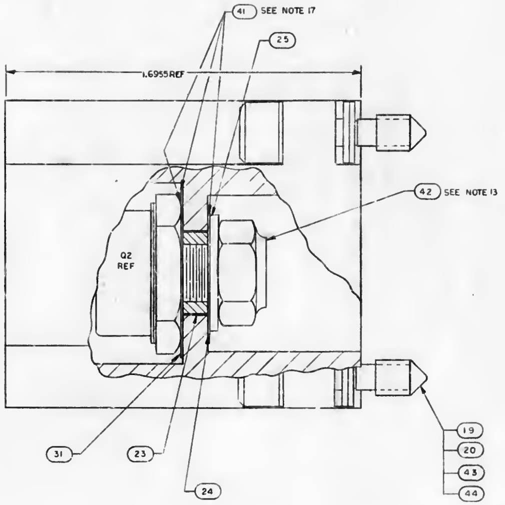


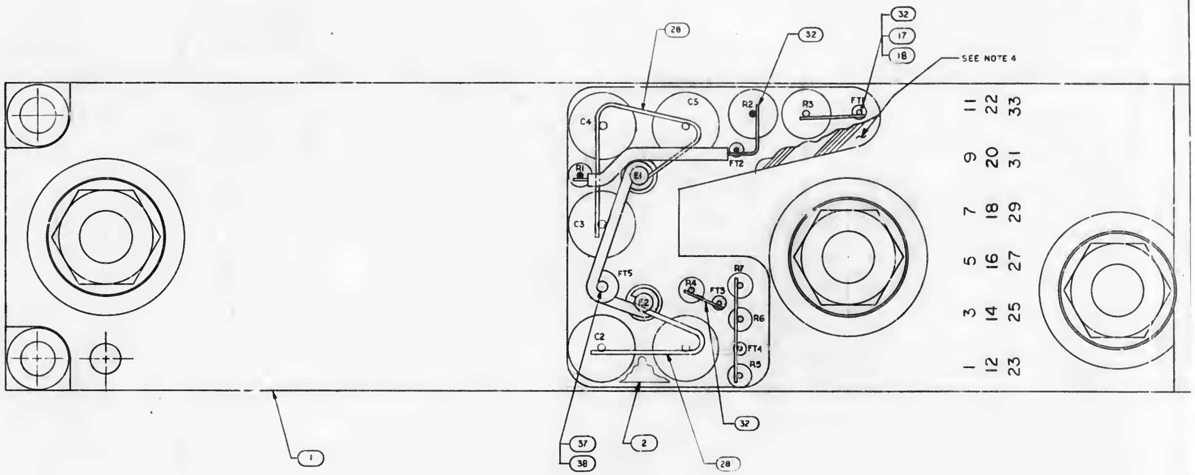
SECTION C-C

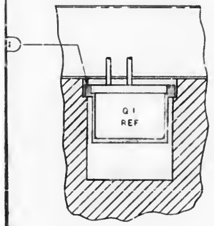
NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WELDED CONNECTIONS TO BE MADE PER ND1002005
3. K INDICATES CATHODE SIDE OF DIODE
4. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
5. MARK .062 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I, SERIALIZE PER ND1002023
6. MARK .125 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
7. STAKE FIND NO. 4 THRU 15 PER ND1002009
8. AR DENOTES AS REQUIRED
9. ENCAPSULATING COMPOUND MUST BE .000/.015 INSIDE HEATSINK PERIPHERY
10. ALL WRAPPED LEADS TO BE SOLDERED PER ND1002071

11. ● BLACK DOT INDICATES LEAD TO BE CUT AT SECOND LEVEL
12. ○ WHITE DOT INDICATES LEAD TO BE CUT AT FIRST LEVEL
13. MOUNTING TORQUE FOR Q2 10/12 INCH POUNDS
~~14. MIL-W-16878/4E SIZE NO 16 COLOR BLACK~~
~~15. MIL-I-23053, CLASS I, COLOR BLACK, SIZE NO 10~~
16. MOUNTING TORQUE FOR CR1 AND CR2 TO BE 25/30 INCH POUNDS.
17. APPLY FIND NO. 41 AS SHOWN TO MOUNTING INTERFACES OF CR1, CR2, Q2 & Q1 BEFORE ASSEMBLY
18. FIND NOS 45 & 46 TO BE WRAPPED WITH ONE LAYER OF FIND NO. 48
19. BOND FIND NO 47 TO FIND NO. 1 PER ND1002004 TYPE I
20. THIS AREA TO BE FREE OF ENCAPSULATION

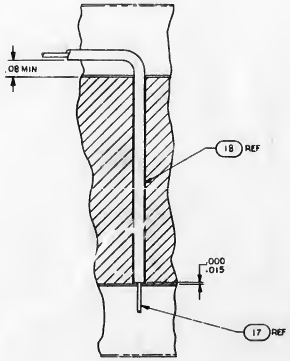




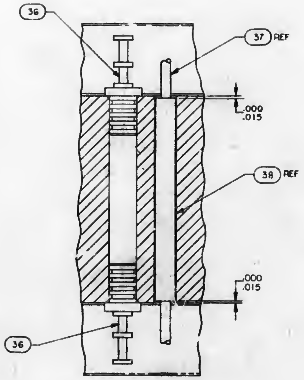




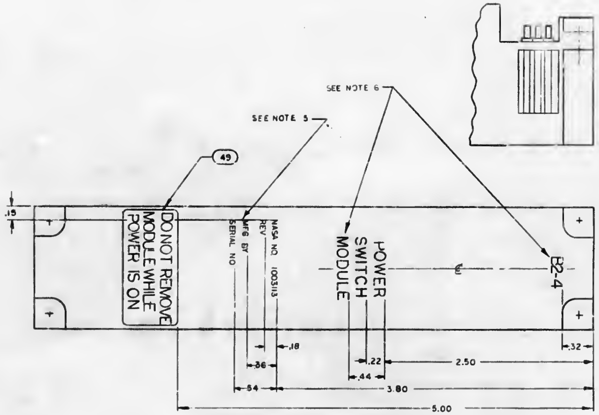
SECTION C-C



SECTION D-D



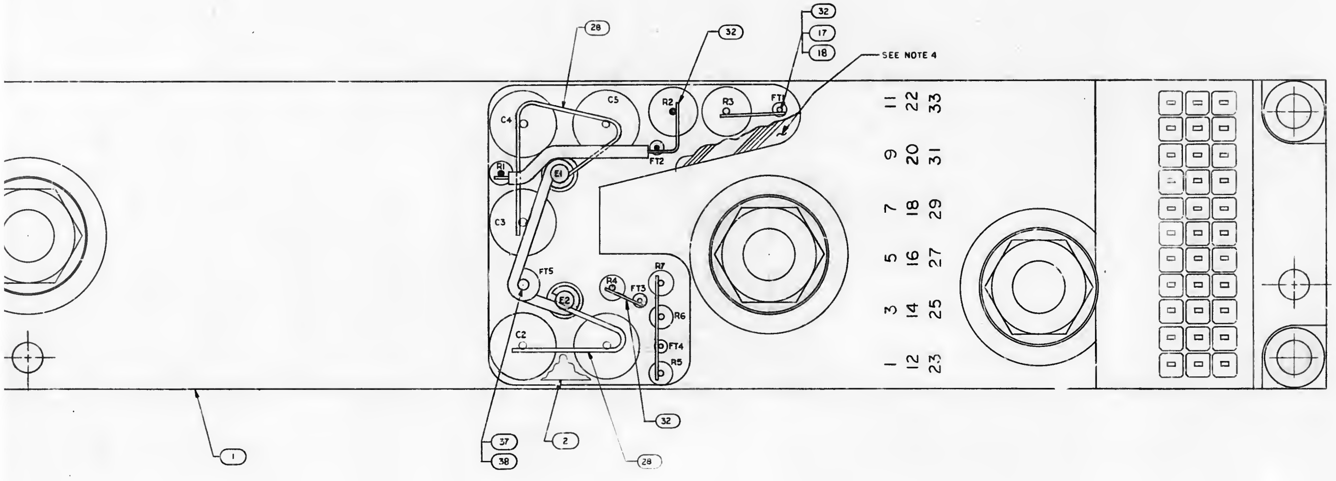
SECTION E-E

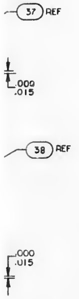


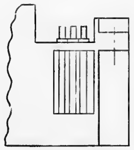
MARKING VIEW
SCALE 2/1

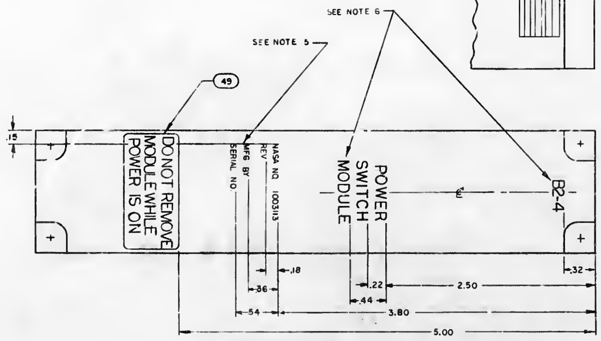
1003113 K

SYM	REVISIONS 02394 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03131	7-13-63	[illegible]
B	REVISED PER TDRR 03459	7-26-63	[illegible]
C	REVISED PER TDRR 04488	[illegible]	[illegible]
D	REVISED PER TDRR 04764	[illegible]	[illegible]
E	REVISED PER TDRR 06027	[illegible] 64	[illegible]
F	REVISED PER TDRR 07345 DR [illegible] CHK [illegible] APPD	4 Mar 64	HLC
G	REVISED PER TDRR 07835 DR R.W.DePoorty CHK A.R.B	4/17/64	HLC
H	REVISED PER TDRR 10124 DR B Jensen CHK A.P.B.	4 Jun 64	HLC
J	REVISED PER TDRR 11243 DR G.Edwards CHK [illegible] RTM	9/19/64	HLC
K	REVISED PER TDRR 13116 DR G.Sapko CHK [illegible] GRM	10/9/64	HLC









MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
>	1006097	SCHEMATIC	REF
1	1004284	DECAL	49
AR	1006806-9	INSULATION TAPE	48
1	1004215-3	INSULATOR	47
1	1006755-79	CAPACITOR	46
2	1006755-133	CAPACITOR	45
4	1004546-3	WASHER, FLAT	44
4	MS16633-4015	RING, RETAINING, EXTERNAL "E"	43
1	MS20364-428A	NUT, SELF LOCKING THIN	42
A/R	1006879	SILCONE COMPOUND, THERMOCONDUCTIVE	41
A/R	1006776-14	INSULATION SLEEVING	40
~~2~~	~~1006710~~	~~SPLICE~~	~~39~~
A/R	1006776 - 16	INSULATION SLEEVING	38
A/R	QQ-W-343, TYPE S, #16	WIRE ELEC	37
4	1006708	TERMINAL STUD	36
~~A/R~~	~~1006757 - 3~~	~~WIRE, ELEC .025 DIA~~	~~35~~
~~A/R~~	~~SEE NOTE 15~~	~~INSULATION SLEEVING~~	~~34~~
A/R	1006776 - 21	INSULATION SLEEVING	33
A/R	1006757 - 18	WIRE, ELEC .010 X.020	32
1	1008024 - 3	WASHER, INSULATOR	31
~~A/R~~	~~SEE NOTE 14~~	~~WIRE, ELECTRICAL~~	~~30~~
A/R	1006776 - 20	INSULATION SLEEVING	29
A/R	1006757 - 21	WIRE, ELEC .032 DIA	28
2	MS35338 - 82	WASHER, LOCK	27
2	MS20341 - 416B	NUT, PLAIN HEX, ELEC	26
3	1008071 - 5	WASHER	25
1	1008024 - 4	WASHER, INSULATOR	24
1	1008021 - 2	BUSHING, INSULATOR	23
~~4~~	~~MS39086-100~~	~~PIN, SPRING~~	~~22~~
~~4~~	~~1004207~~	~~CYLINDER, DRIVE~~	~~21~~
4	1004546 - 1	WASHER, FLAT	20
4	1004579 - 1	SCREW, JACKING	19
A/R	1006776 - 22	INSULATION, SLEEVING	18
A/R	1006757 - 13	WIRE, ELEC .020 DIA	17
~~1~~	~~1008025 - 2~~	~~BUSHING, INSULATOR~~	~~16~~
1	1006827	TRANSISTOR	15
1	1003089-2	TRANSISTOR, POTTED	14
1	1006800	INDUCTOR	13
1	1006798	INDUCTOR	12
2	1006791	DIODE	11
5	1006755 - 134	CAPACITOR	10
1	1006715 - 2	RESISTOR	9
2	1006750 - 56	RESISTOR	8
1	1006788 - 6	RESISTOR	7
1	1010389 - 51	RESISTOR	6
1	1010385 - 43	RESISTOR	5
1	1006750 - 12	RESISTOR	4
1	1004215-1	INSULATOR	3
1	1004215-2	INSULATOR	2
1	1003124	HEADER HOUSING ASSY	1

LIST OF MATERIALS

NEXT ASS	USED ON
1003184	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
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INSTRUMENTATION LAB
Cambridge, Mass

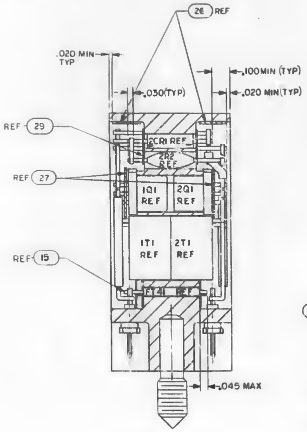
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL George J. Nerbeck [illegible]

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

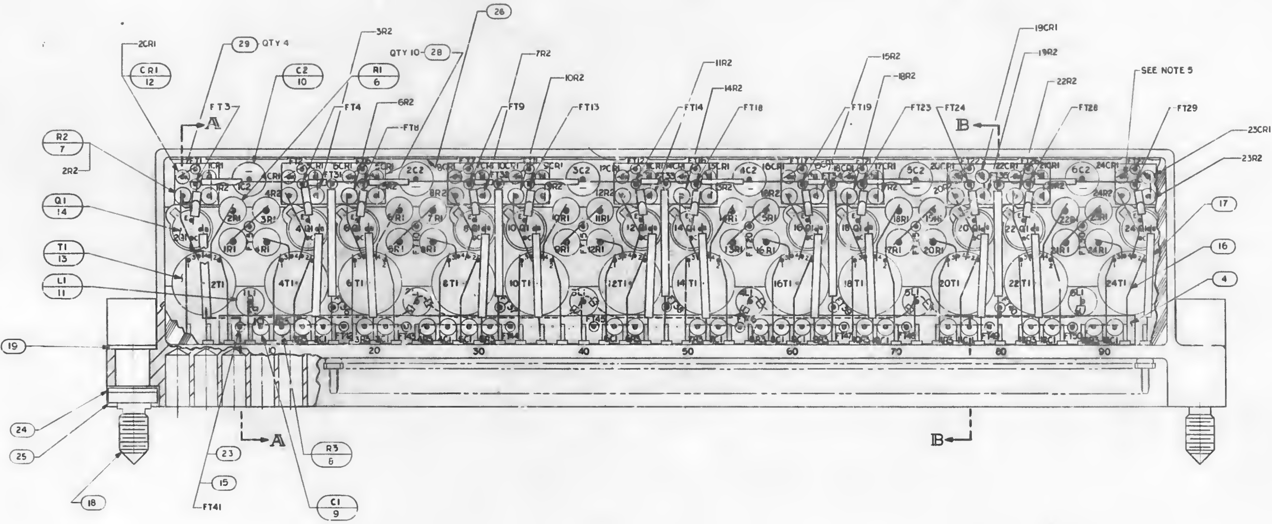
POWER SWITCH MODULE
ASSEMBLY B2-4
AGC POWER SUPPLY

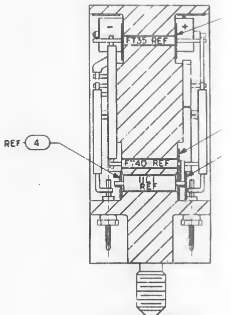
CODE IDENT NO ——
SIZE J
NASA DRAWING NO. 1003113
SCALE 5/1
WT
SHEET 1 OF 1

1003113 K

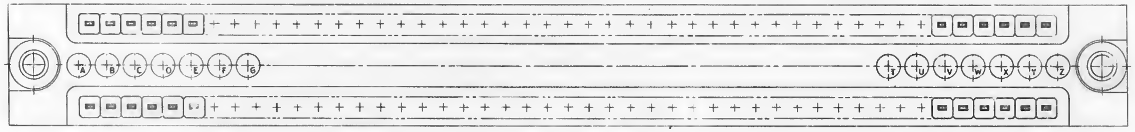


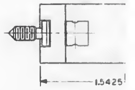
SECTION A-A

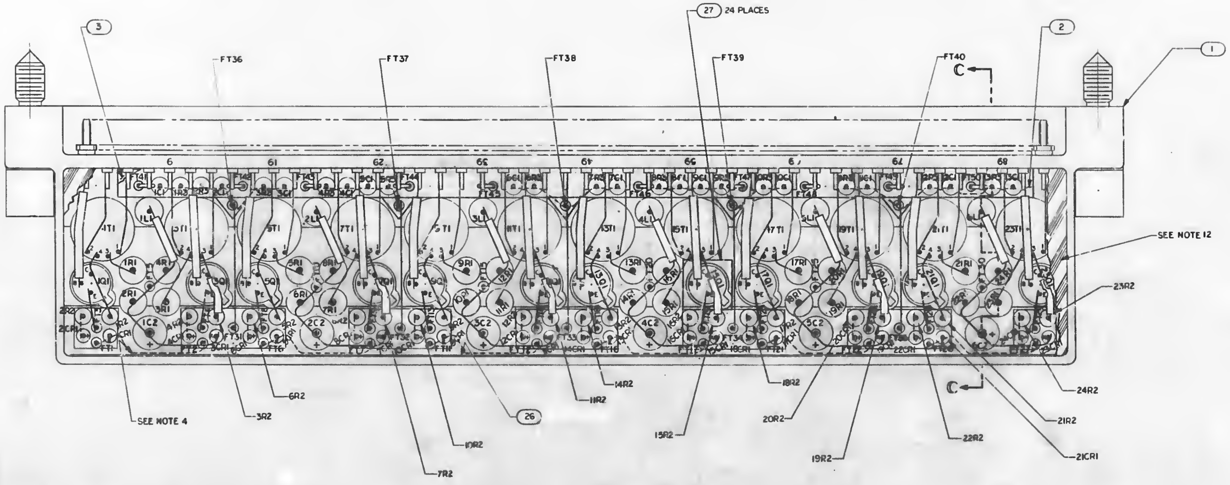




SECTION B-B







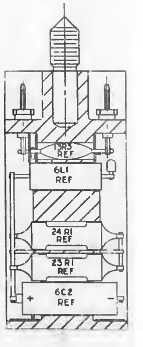
NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. STAKE ALL TRANSFORMERS & TRANSISTORS PER ND1002009
4. FT DENOTES FEED THRU
5. K INDICATES CATHODE SIDE OF DIODE
6. AR DENOTES AS REQUIRED
7. MARK .093 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
8. MARK .250 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2
9. FILL KEYING HOLES MARKED A,C,G,T,X,Y USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183

~~11. BOND FIND NO.5 TO FIND NO.1 PER ND 1002004~~

12. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
13. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
14. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
15. DASHED LINES INDICATE FIRST LEVEL WIRING AND SOLID LINES INDICATE SECOND LEVEL WIRING
16. STAKE ALL DIODES & RESISTORS BY COMPLETELY COATING COMPONENTS WITH NEOPRENE BASE ADHESIVE PER MIL-A-5092A

~~17. DIM A TO BE EQUAL TO DIM B WITHIN .010~~

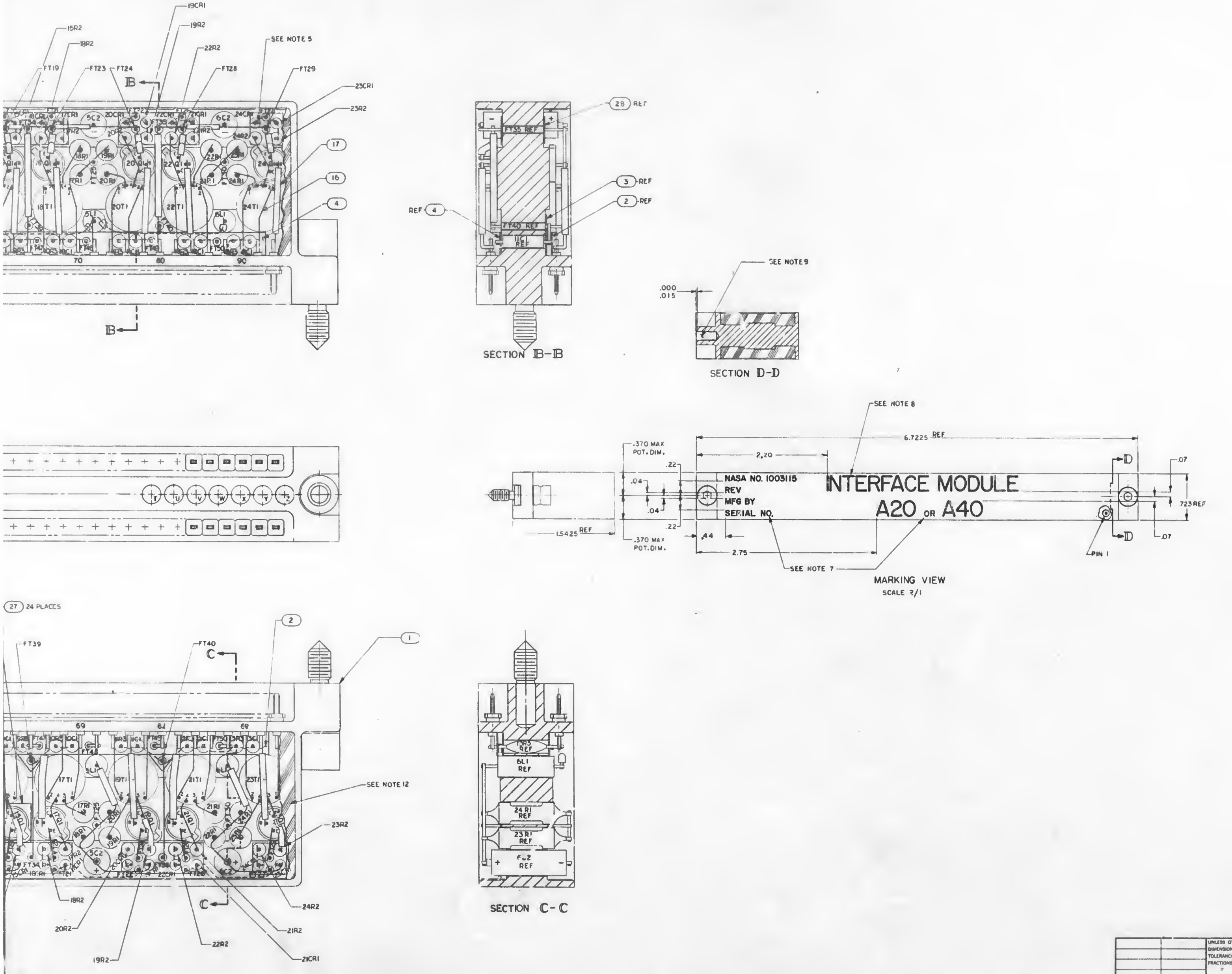


SECTION C-C

1003115 J SHEET

1003115 J

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 03113	[illegible]	[illegible]
B	REVISED PER TDRR 03246	[illegible]	[illegible]
C	REVISED PER TDRR 04155	[illegible]	[illegible]
D	REVISED PER TDRR 05300	[illegible]	[illegible]
E	REVISED PER TDRR 05645	[illegible]	[illegible]
F	REVISED PER TDRR 07042 DR [illegible] CHK [illegible]	4/14/64	HC
G	REVISED PER TDRR 10138 DR R. [illegible] CHK J. T. L. RTM	9/3/64	[illegible]
H	REVISED PER TDRR 11243 DR [illegible] CHK [illegible] RTM	9/14/64	HC
J	REVISED PER TDRR 13116 DR [illegible] CHK [illegible] RTM	9/9/64	HC



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
REF	1006535	SCHEMATIC	
4	1004629-2	INSULATOR	29
10	1004629-1	INSULATOR	28
24	1004605	INSULATOR, MYLAR	27
AR	1006826-12	INSULATION TAPE, ELEC	26
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	25
2	1004546-3	WASHER, FLAT	24
AR	1006776-22	INSULATION, SLEEVING	23
~~6~~	~~1004117~~	~~PLUG, KEYING~~	~~22~~
~~2~~	~~MS39086-100~~	~~PIN, SPRING~~	~~21~~
~~2~~	~~1004207~~	~~DRIVER CYLINDER~~	~~20~~
2	1004546-1	WASHER, FLAT	19
2	1004579-1	SCREW, JACKING	18
AR	1006776-21	INSULATION SLEEVING	17
AR	1006757-1	WIRE, ELECTRICAL	16
AR	1006757-8	WIRE, ELECTRICAL .020 DIA	15
24	1003520-1	TRANSISTOR	14
24	1006762-2	TRANSFORMER	13
24	1006751	DIODE	12
6	1010406-6	COIL	11
6	1006755-79	CAPACITOR	10
13	1006777-24	CAPACITOR	9
13	1006750-39	RESISTOR	8
24	1006750-32	RESISTOR	7
24	1006760-16	RESISTOR	6
~~1~~	~~1004225-4~~	~~INSULATOR~~	~~5~~
1	1004225-1	INSULATOR	4
1	1004225-3	INSULATOR	3
1	1004225-2	INSULATOR	2
1	1003129	HEADER HOUSING ASSEMBLY	1

LIST OF MATERIALS

1003115 J

NEXT ASSY	USED ON
1003187	1003186

APPLICATION

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CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible] 8/7/63
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERFACE MODULE ASSEMBLY
A20 OR A40
AGC COMPUTER

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003115
SCALE 4/1
WT
SHEET 1 OF 1

1003115 J
SHEET

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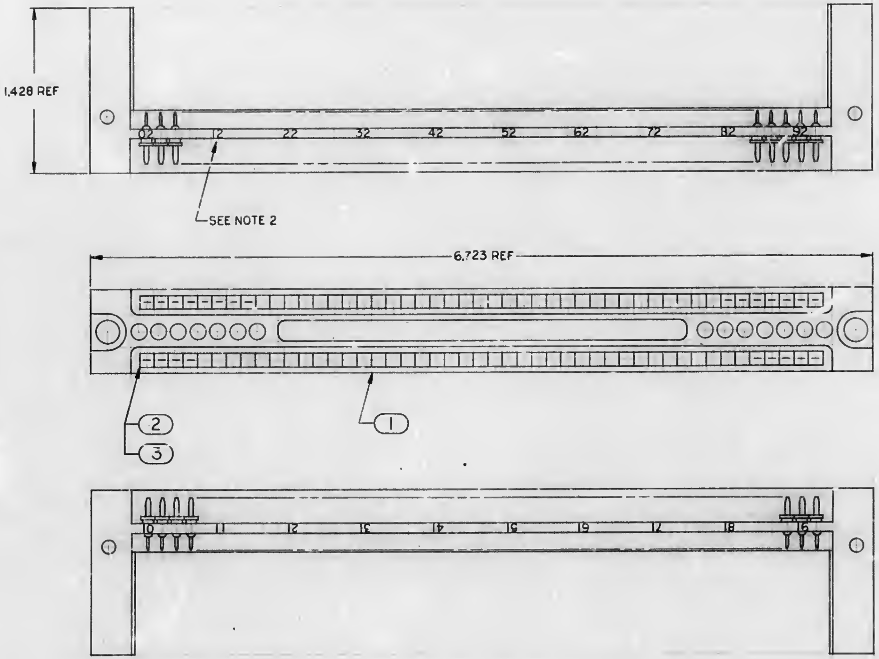
REVISIONS	TDRR02048		
SYM	DESCRIPTION	DATE	APPROVAL



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MARK .040 TO .080 HIGH WHITE CHARACTERS PER ND 1002019
3. INSTALL FIND NO. 2 AND FIND NO. 3 PER ND 1002136

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
94	1006782-1	CONTACT WRAPOST MALE MIN	3
94	1006775	INSULATOR, WRAPOST MALE MIN.	2
1	1003109	HEADER, HOUSING SENSE AMP. MODULE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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CHECKED 7/16/63
APPROVAL
APPROVAL W B Turner 7/16/63
NASA APPROVAL 7-17-63
MIT APPROVAL 7/17/63

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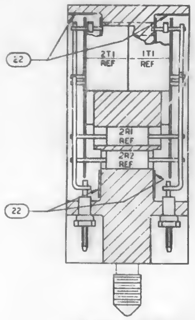
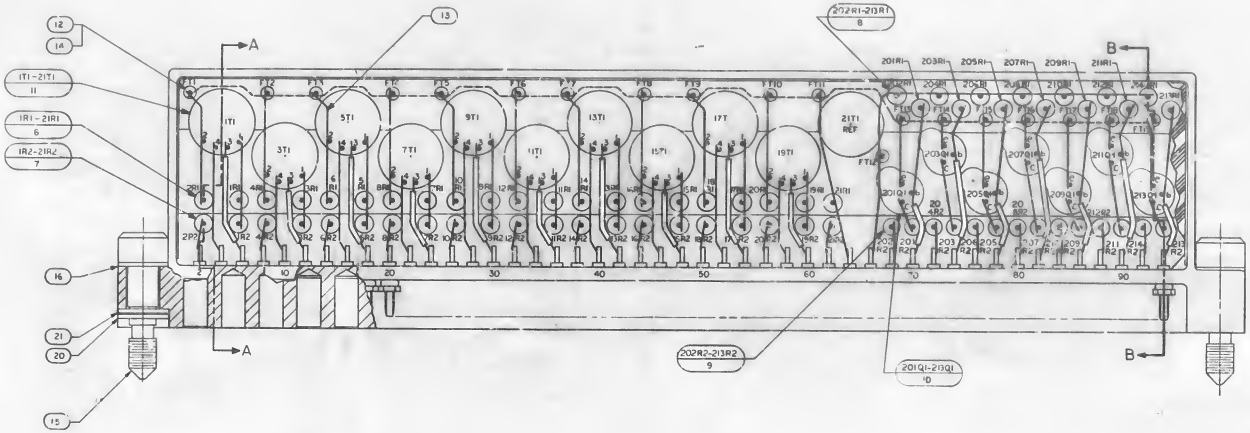
HEADER HOUSING ASSEMBLY
SENSE AMPLIFIER MODULE

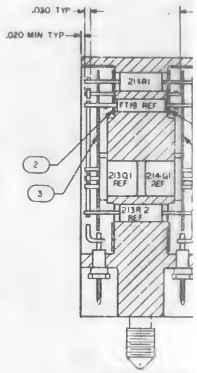
CODE IDENT NO. SIZE D NASA DRAWING NO. 1003121
SCALE 2/1 WT SHEET 1 OF 1

1003121



SECTION A-A





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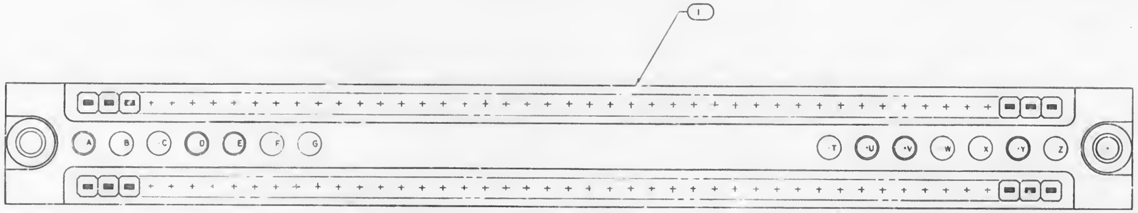
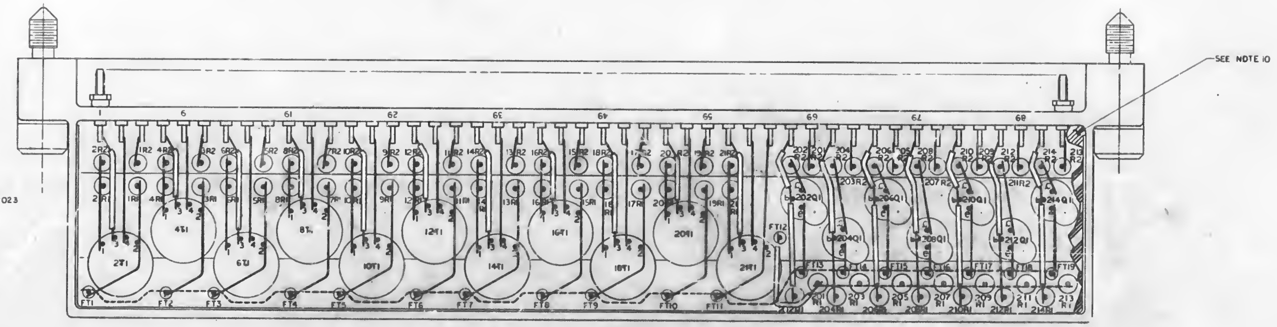


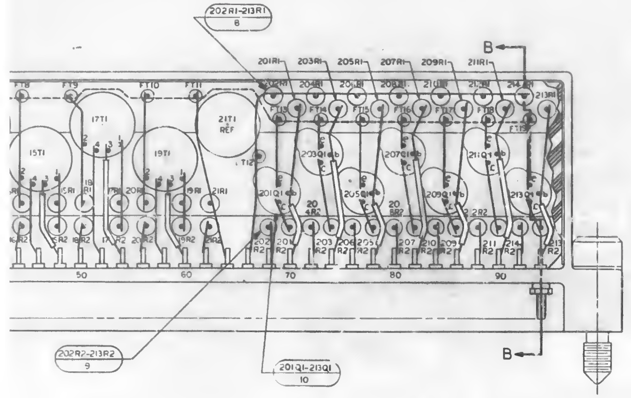


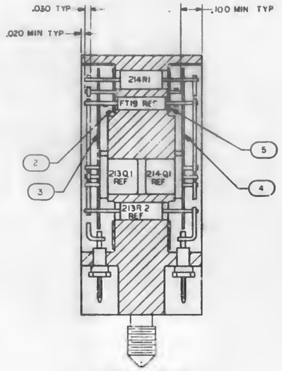
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
4. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. DASHED LINE INDICATES FIRST LEVEL WIRING AND SOLID LINE INDICATES SECOND LEVEL WIRING
6. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
7. MARK .250 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2
8. FILL KEYING HOLES MARKED A,D,E,U,V,Y WITH THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183
9. ~~INDICATED AREAS TO BE FREE FROM ENCAPSULATION~~
10. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
11. AR DENOTES AS REQUIRED
12. FT DENOTES FEED THRU
13. STAKE ALL TRANSFORMERS AND TRANSISTORS PER ND 1002009
14. COMPONENTS IN CIRCUIT--101 THRU--121 DESIGNATED BY PREFIXES 1 THRU 21, COMPONENTS IN CIRCUITS--201 THRU--214 DESIGNATED BY PREFIXES 201 THRU 214
15. ~~DIM. A TO BE EQUAL TO DIM. B WITHIN .010~~

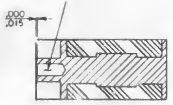
1003123 J | SHEET 1

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 03/ .	9-3-63	
B	REVISED PER TDRR 03375	9-9-63	
C	REVISED PER TDRR 04757	11-19-63	
D	REVISED PER TDRR 05107	12-10-63	
E	REVISEO PER TDRR 05645		
F	REVISED PER TDRR 06321		
G	REVISED PER TDRR 07266 DR CHK	3/23/64	
H	REVISED PER TDRR 11243 DR CHK RTM		
J	REVISED PER TDRR 13116 DR CHK		

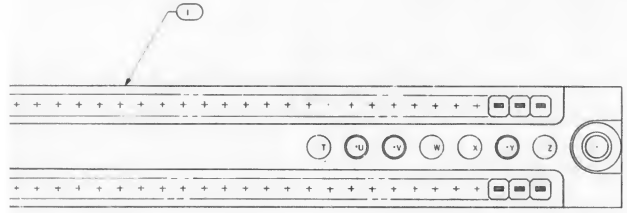


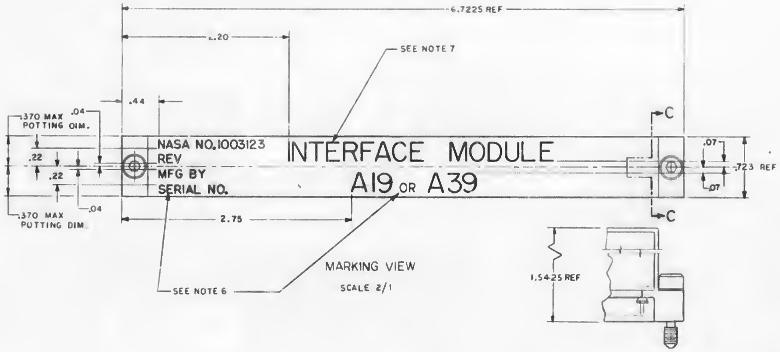


SECTION B-B



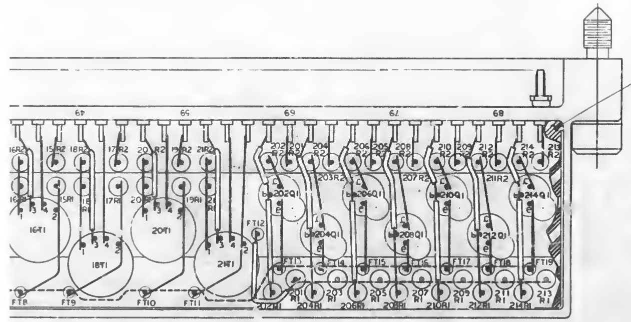
SECTION C-C





MARKING VIEW

SCALE 2/1



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
REF	1006534	FLOW DIAGRAM	
AR	1006826-12	TAPE, INSULATION	22
2	1004546 3	WASHER, FLAT	21
2	MS16633-4015	RING RETAINING EXTERNAL "E"	20
~~6~~	~~1004117~~	~~PLUG, KEYING~~	~~19~~
~~3~~	~~MS39086-100~~	~~PIN, SPRING~~	~~18~~
~~2~~	~~1004207~~	~~DRIVE, CYLINDER~~	~~17~~
2	1004546-1	WASHER, FLAT	16
2	1004579-1	SCREW, JACKING	15
AR	1006776-22	INSULATION, SLEEVING	14
AR	1006757-1	WIRE, ELECTRICAL	13
AR	1006757-8	WIRE, ELECTRICAL	12
21	1006762-2	TRANSFORMER	11
14	1003520 1	TRANSISTOR	10
14	1006750-39	RESISTOR	9
14	1006750-49	RESISTOR	8
21	1006750-24	RESISTOR	7
21	1006750 -1	RESISTOR	6
1	1004238-4	INSULATOR, MYLAR	5
1	1004238-3	INSULATOR, MYLAR	4
1	1004238-2	INSULATOR, MYLAR	3
1	1004238-1	INSULATOR, MYLAR	2
1	1003125	HEADER ASSEMBLY	1

LIST OF MATERIALS

1003187	1003400
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ±
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MATERIAL
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FINAL FINISH

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DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERFACE MODULE ASSY
A19 OR A39

CODE IDENT NO —— SIZE J NASA DRAWING NO. 1003123
SCALE 4/1 WT SHEET 1 OF 1

1003123 J SHEET 1

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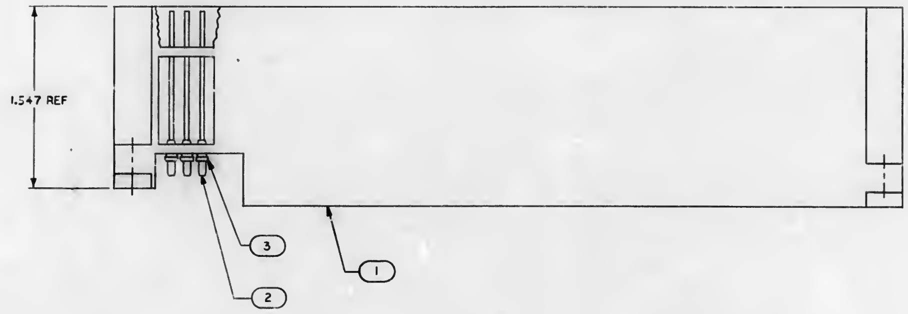
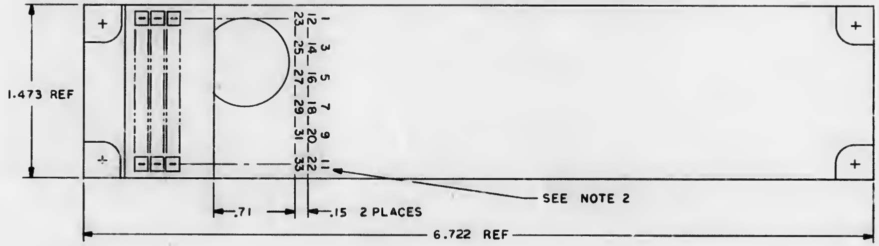
REVISIONS 02394

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02839	8-26-63	RPK
B	REVISED PER TDRR 04180	11-5-63	RPK WK





NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK .060/.080 HIGH WHITE CHARACTERS PER ND1002019
3. ASSEMBLE FIND NO.2&3 PER ND1002136

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
33	1006775	INSULATOR, WRAPOST, MALE	3
33	1006782-5	CONTACT WRAPOST, MALE MINATURE	2
1	1004191	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003113	

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN DATE
CHECKED
APPROVAL 8/6/63
APPROVAL
NASA APPROVAL 9/7/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEX.

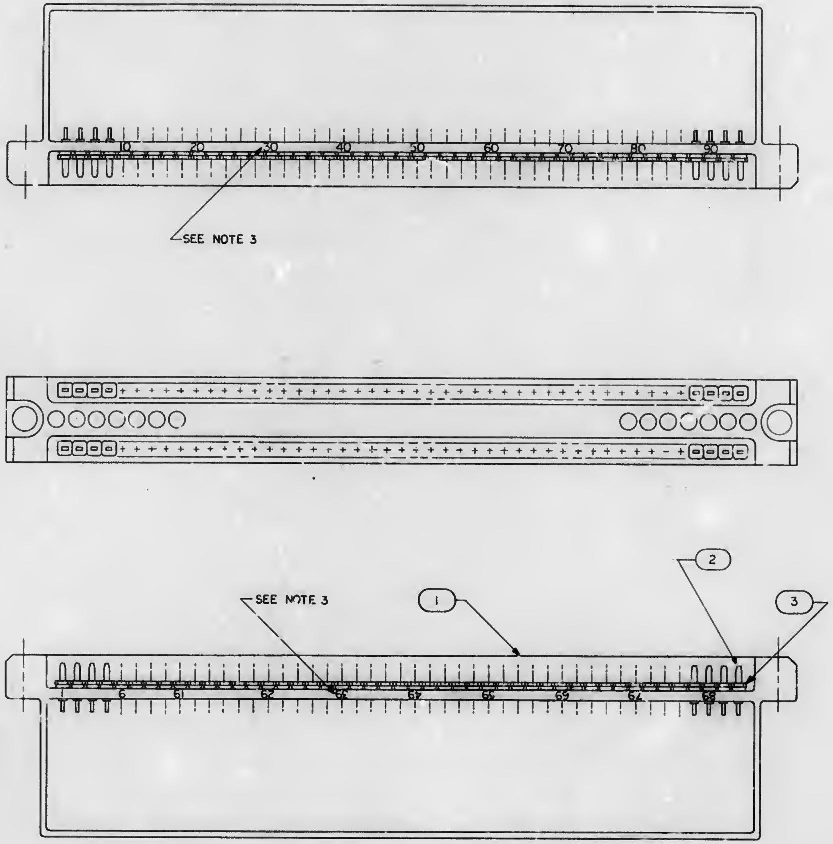
HEADER HOUSING
ASSEMBLY
POWER SWITCH MODULE

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003124
SCALE 2/1
WT
SHEET 1 OF 1

1003124 B

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 02314			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02837	8/28/63	



NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO. 2&3 PER ND1002136
3. MARK .060/.080 HIGH WHITE PER ND1002019

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
94	1006775	INSULATOR, WRAPOST, MALE MIN	3
94	1006782-1	CONTACT, WRAPOST, MALE MIN	2
1	1004194	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003123	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 9/7/63
MIT APPROVAL

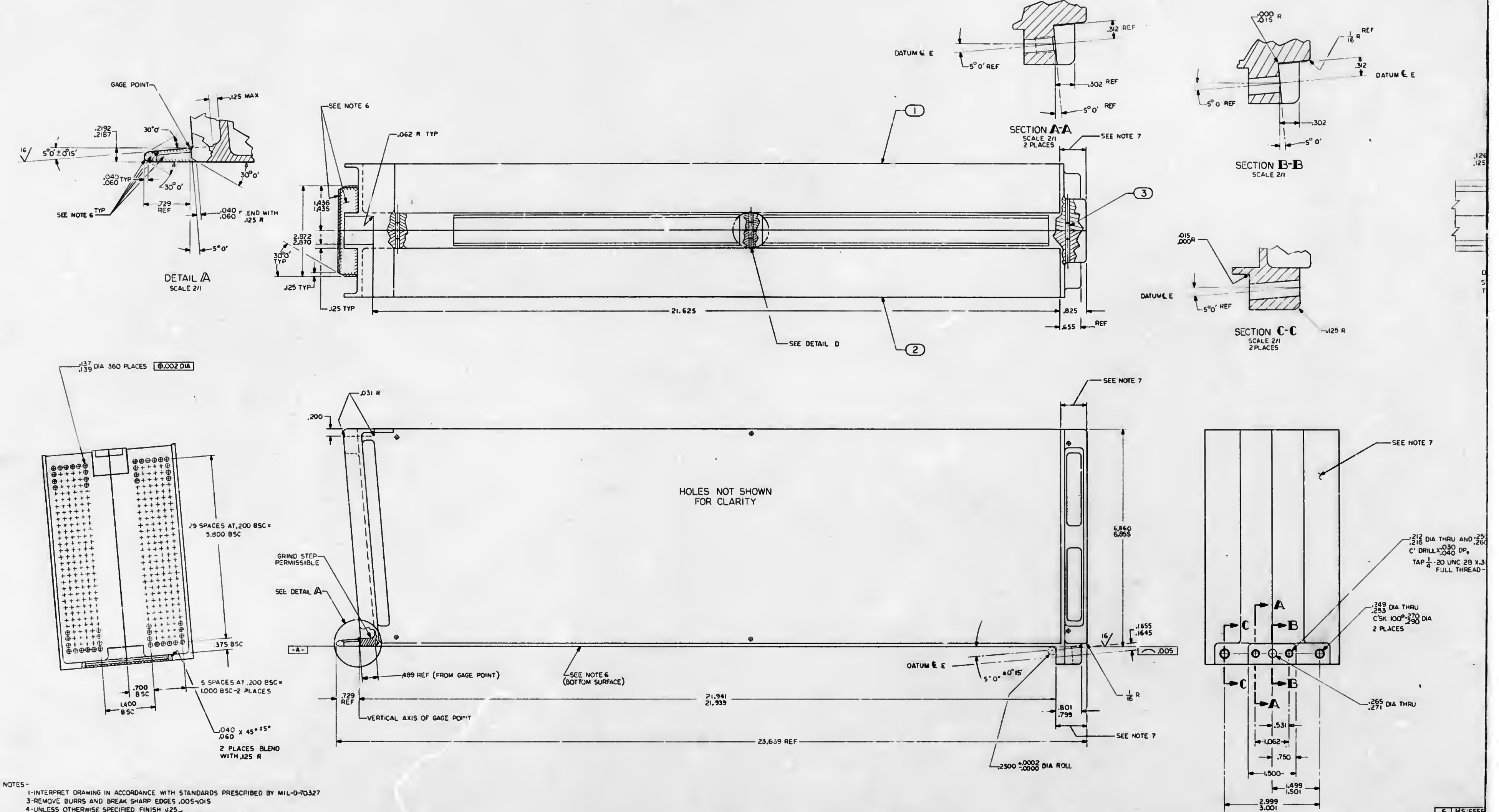
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER ASSEMBLY
INTERFACE MODULE
A19 OR A39

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003125
SCALE 2/1
WT
SHEET 1 OF 1

1003125 A

1003126 F



NOTES-

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

3-REMOVE BURRS AND BREAK SHARP EDGES .005-.015

4-UNLESS OTHERWISE SPECIFIED FINISH 125/

6-THESE SURFACES TO BE FREE FROM ANODIZE AND PLATED. PLATE (ELECTRODEPOSITED) QQ-C-320, CLASS II, TYPE 2. PLATING TO BE .0004 TO .0002 THICK, HARDNESS ROCKWELL C70-72. DIMENSIONS APPLY AFTER PLATING, FINISH 32/ AFTER PLATING

5-FINISH-SEE NOTE 6 FOR PLATED AREAS. ALL NON PLATED SURFACES TO BE ANODIZED PER MIL-A-8625 TYPE II DYED BLACK. REMOVE ALL DOWEL PINS AND DISCARD, PLUG ALL DOWEL HOLES AND THREADED INSERTS, AND .205/.215 C'BORED HOLES BEFORE ANODIZING

2-CLAMP FIND NO.1 AND FIND NO.2 TOGETHER FLUSH AT SURFACE A AND MATCH REDRILL AND DOWEL AS FIRST OPERATION

7-PAINT INDICATED SURFACE WITH 1010729-2 LIGHT GREY EPOXY RESIN ENAMEL PER ND

PARTS TO BE PRODUCED AND ISSUED AS A MATCHED SET

6	MS:6556
1	1004213
1	1004216
QTY REQD	

1003137	
1003136	
NEXT ASSY	USED ON
APPLICATION	

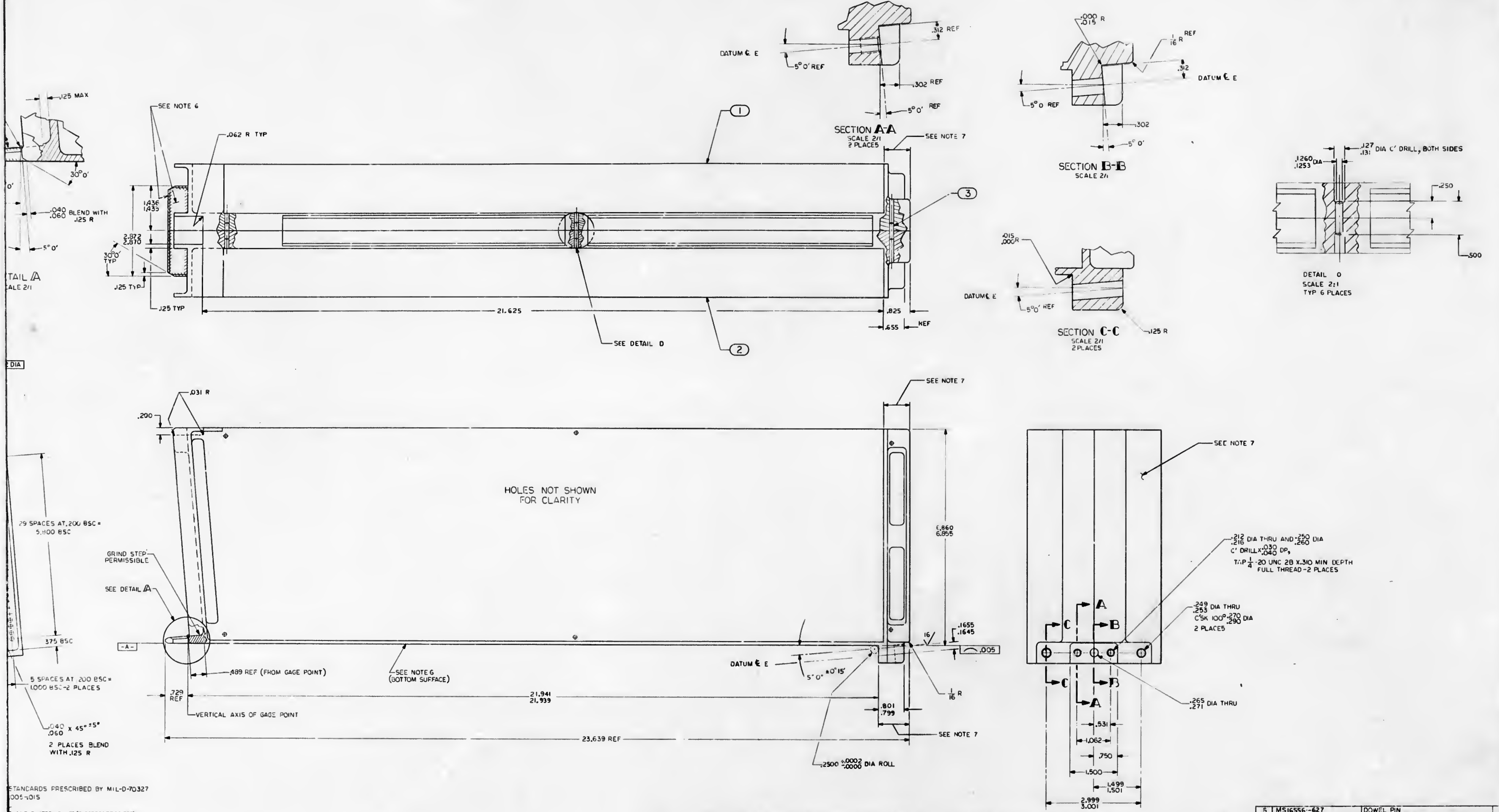
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±0°30
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH
SEE NOTES 4 AND 5

DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

1003126F

1003126 F

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02399	[illegible]	[illegible]
B	REVISED PER TDRR 03286	[illegible]	[illegible]
C	REVISED PER TDRR 03629	10-3-65	WK
D	REVISED PER TDRR 04409	11-26-65	WK
E	REVISED PER TDRR 05704	[illegible]	WK
F	REVISED PER TDRR 07502 DR [illegible] CHK [illegible]	4/4/66	[illegible]



STANCARDS PRESCRIBED BY MIL-D-70327
005-.015

E AND PLATED. PLATE (ELECTRODEPOSITED)
E .0004 TO .0002 THICK, HARDNESS
R PLATING FINISH 32/ AFTER PLATING

LL NON PLATED SURFACES TO BE ANODIZED PER
LL DOWEL PINS AND DISCARD, PLUG ALL DOWEL HOLES
ED HOLES BEFORE ANODIZING

FLUSH AT SURFACE A AND MATCH REDRILL AND

2 LIGHT GREY EPOXY RESIN

PARTS TO BE PRODUCED AND ISSUED AS A MATCHED SET

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
6	MS16556-627	DOWEL PIN	3
1	1004213	TRAY A, LEFT HAND	2
1	1004216	TRAY A, RIGHT HAND	1

LIST OF MATERIAL

NEXT ASSY	USED ON
1003137	
1003136	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON:
FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±0° 30'
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH
SEE NOTES 4 AND 5

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN [illegible] DATE 7-10-63
CHECKED [illegible]
APPROVAL [illegible] 7/30/63
APPROVAL [illegible]
NASA APPROVAL [illegible] 7-31-63
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

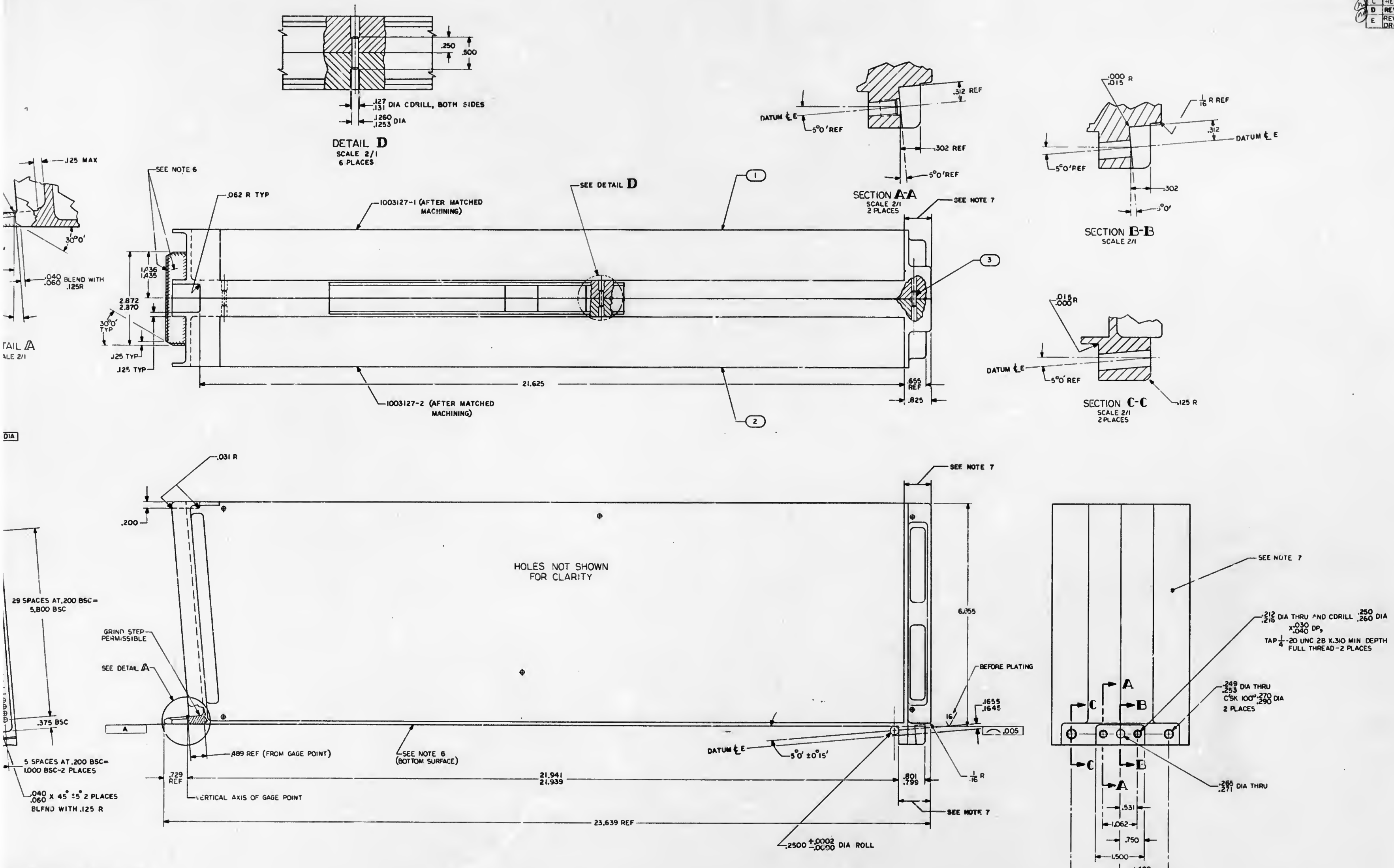
TRAY A
MATCHED MACHINED

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003126
SCALE 1/1
WT
SHEET 1 OF 1

1003126F

1003127 E

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03468	[illegible]	[illegible]
B	REVISED PER TCRR 0403	[illegible]	[illegible]
C	REVISED PER TDRR 0458	[illegible]	[illegible]
D	REVISED PER TDRR 05784	[illegible]	WK
E	REVISED PER TDRR 07344 DR Wheeler CHK	[illegible]	[illegible]



STANDARDS PRESCRIBED BY MIL-D-70327
ER FLUSH AT SURFACE A AND MATCH
ON
.005-.015
25/
ALL NON PLATED SURFACES TO BE ANODIZED PER
VE ALL DOWEL PINS AND DISCARD. PLUG ALL HOLES
BEFORE ANODIZING (ALSO SEE NOTE 7)
NODIZE AND PLATED. PLATE (ELECTRODEPOSITED)
TING TO BE .0004 TO .0002 THICK, HARDNESS ROCKWELL
TING, FINISH 32 AFTER PLATING
2 LIGHT GREY EPOXY RESIN ENAMEL PER ND

PARTS TO BE PRODUCED AND ISSUED AS A MATCHED SET

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
6	MS16556-627	DOWEL PIN	3
1	1004220	TRAY "B" LEFT HAND	2
1	1004221	TRAY "B" RIGHT HAND	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003146	
1003145	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±0°30'
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH SEE NOTES 4 AND 5

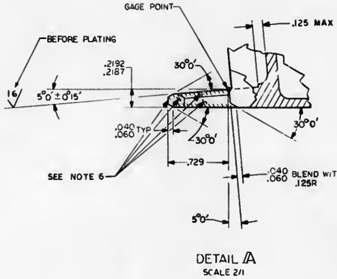
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Mahoney DATE 7-12-63
CHECKED
APPROVAL WB Emmons 6 Aug 63
APPROVAL [illegible] 8/6/63
NASA APPROVAL [illegible] 8/7/63
MIT APPROVAL George J Woolman

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

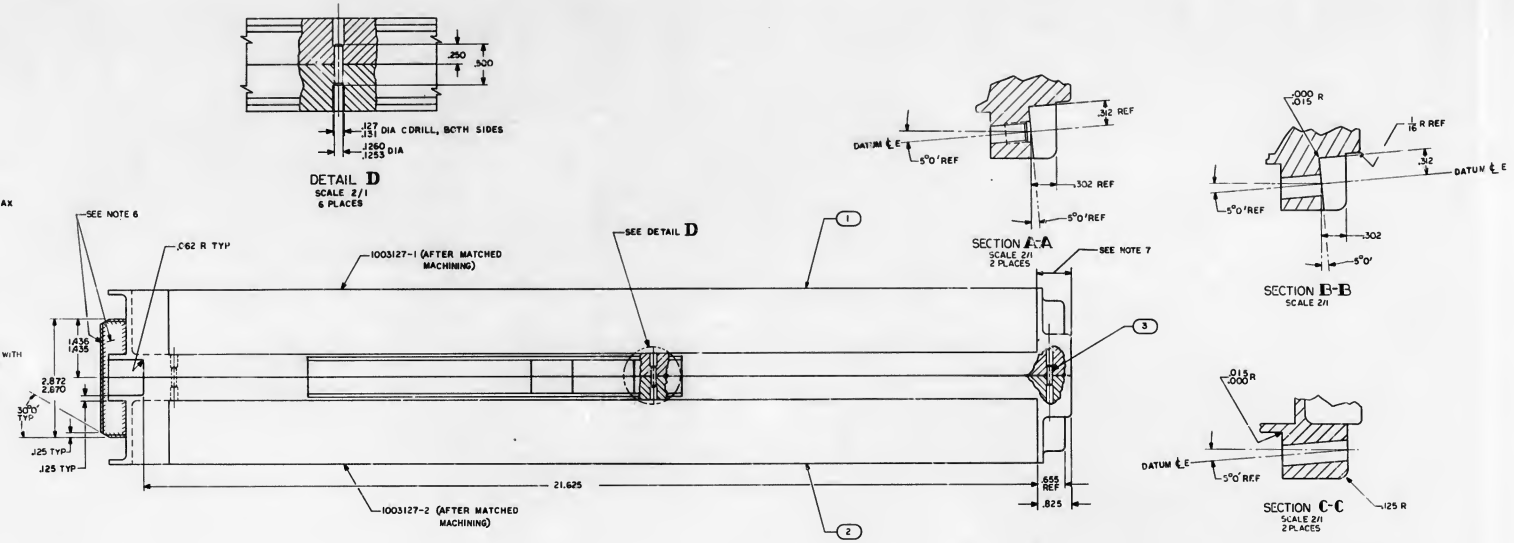
TRAY B
MATCHED MACHINED

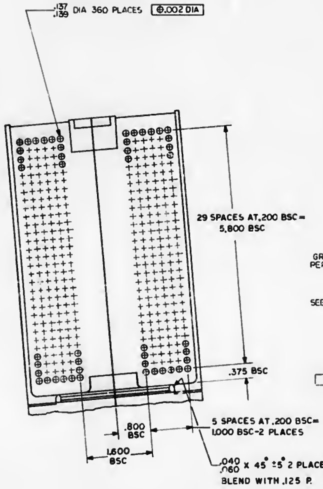
CODE IDENT NO — SIZE J NASA DRAWING NO. 1003127
SCALE 1/1 WT SHEET 1 OF 1

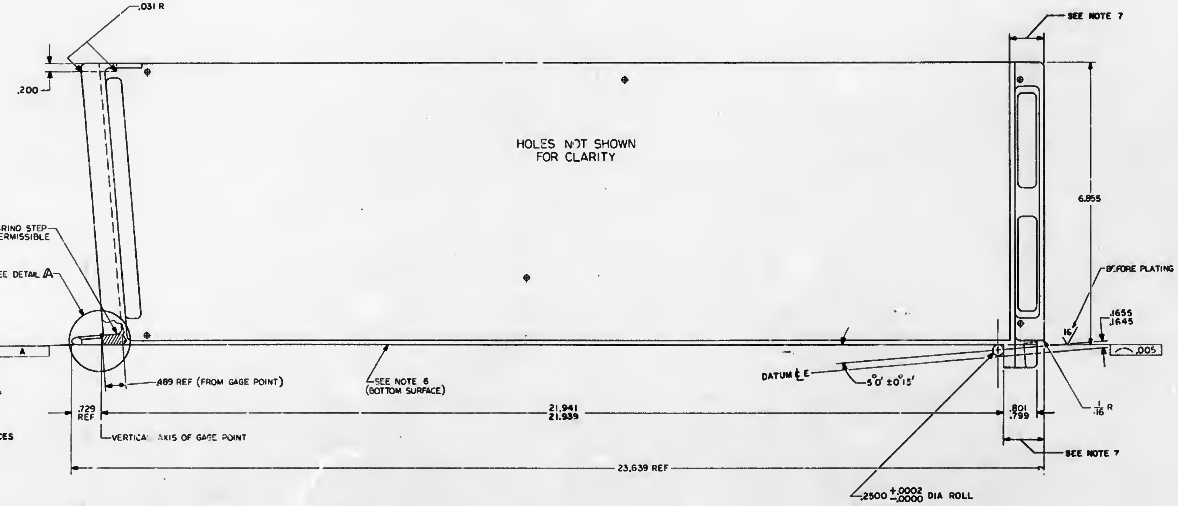
1003127 E

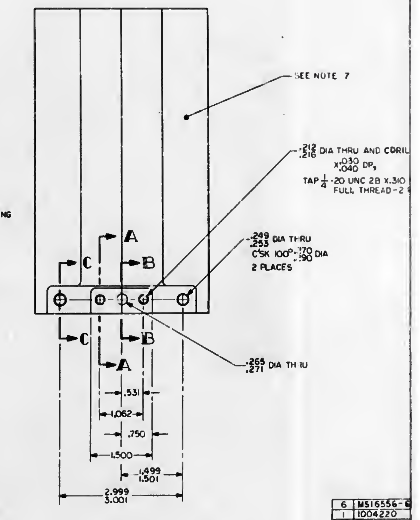


DETAIL A
SCALE 2/1




.137
.139 DIA 360 PLACES ⊕ .002 DIA
29 SPACES AT .200 BSC = 5.800 BSC
.375 BSC
.800 BSC
1.600 BSC
5 SPACES AT .200 BSC = 1.000 BSC-2 PLACES
.040
.060 X 45° ±5° 2 PLACES
BLEND WITH .125 R





NOTES-

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-CLAMP FIND NO.1 AND FIND NO.2 T 3ETHER FLUSH AT SURFACE A AND MATCH REDRILL AND DOWEL AS FIRST OPERATION
3-REMOVE BURRS AND BREAK SHARP EDGES .005-.015
4-UNLESS OTHERWISE SPECIFIED FINISH 125
5-FINISH-SEE NOTE 6 FOR PLATED AREAS. ALL NON PLATED SURFACES TO BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK. REMOVE ALL DOWEL PINS AND DISCARD. PLUG ALL HOLES EXCEPT $\frac{.137}{.139}$ DIA AND $\frac{.072}{.073}$ DIA HOLES BEFORE ANODIZING (ALSO SEE NOTE 7)
6-THESE SURFACES TO BE FREE FROM ANODIZE AND PLATED. PLATE (ELECTRODEPOSITED) PER QQ-C-320, CLASS II, TYPE 2, PLATING TO BE .0004 TO .0002 THICK, HARDNESS ROCKWELL C70-72 DIMENSIONS APPLY AFTER PLATING, FINISH 32 AFTER PLATING
7-PAINT INDICATED SURFACES WITH 1010729-2 LIGHT GREY EPOXY RESIN ENAMEL PER ND

PARTS TO BE PRODUCED AND
ISSUED AS A MATCHED SET

6	MS16556-6
1	1004220
1	1004221
QTY REQD	PART IDENTIF

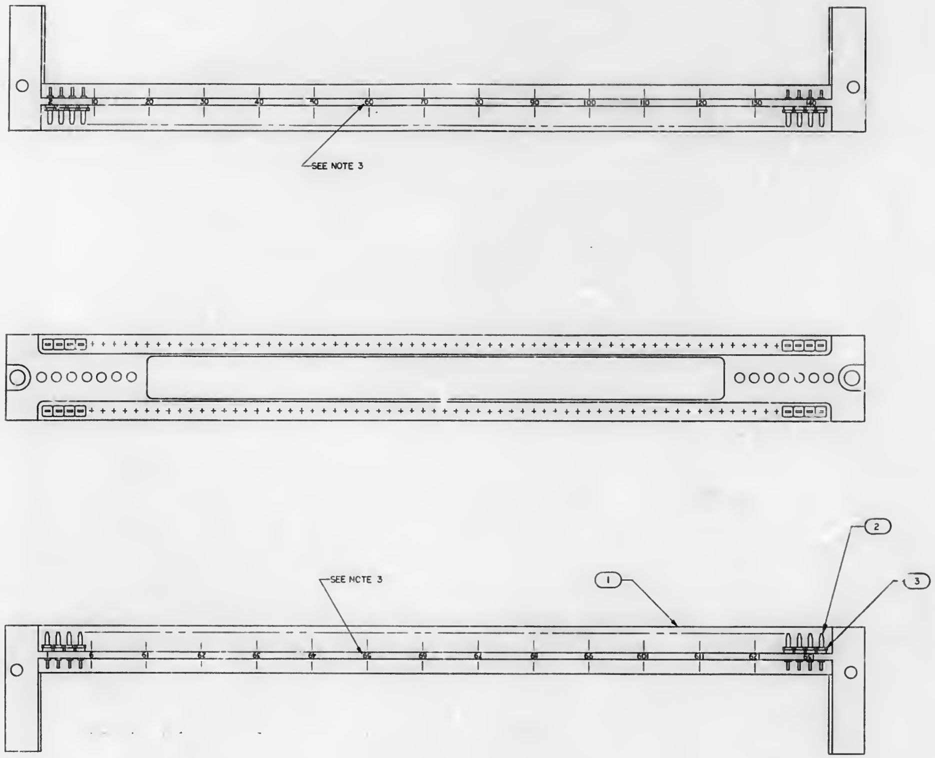
1003146	
1003145	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±0°30'
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH SEE NOTES 4 AND 5

MIT
INSTRUMENTATION
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

REVISIONS 02144

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02843	[illegible]	[illegible]
B	REVISED PER TDRR 04389	[illegible]	[illegible]



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO. 2&3 PER ND1002136
3. MARK .060/.080 HIGH WHITE PER ND1002019

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
142	1006775	INSULATOR, WRAPOST, MALE MIN	3
142	1006782-1	CONTACT, WRAPOST, MALE MIN	2
1	1004197	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003165	
1003153	
1003132	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible] 9/7/63
MIT APPROVAL George J Mulrooney

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

HEADER HOUSING ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1003128
SCALE 2/1
WT
SHEET 1 OF 1

1003128 B

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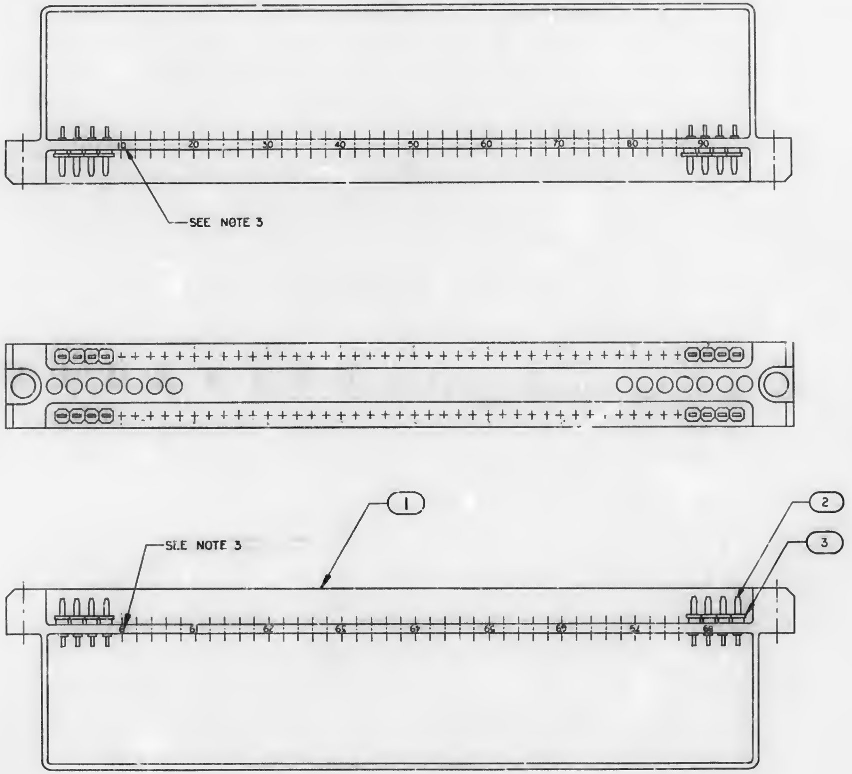
REVISIONS 02398

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02538	5/28/70	EPL



NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO. 2&3 PER ND1002136
3. MARK .060/.080 HIGH WHITE PER ND1002019

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
94	1006775	INSULATOR, WRAPOST, MALE MIN	3
94	1006782-1	CONTACT, WRAPOST, MALE MIN	2
1	1004197	HEADER, HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003115	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. Machado DATE 7-25-68
CHECKED [illegible] 6-24-68
APPROVAL [illegible] 6-24-68
APPROVAL [illegible] 8/6/68
NASA APPROVAL [illegible] 8/7/68
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER HOUSING ASSEMBLY
INTERFACE MODULE
A20 OR A40

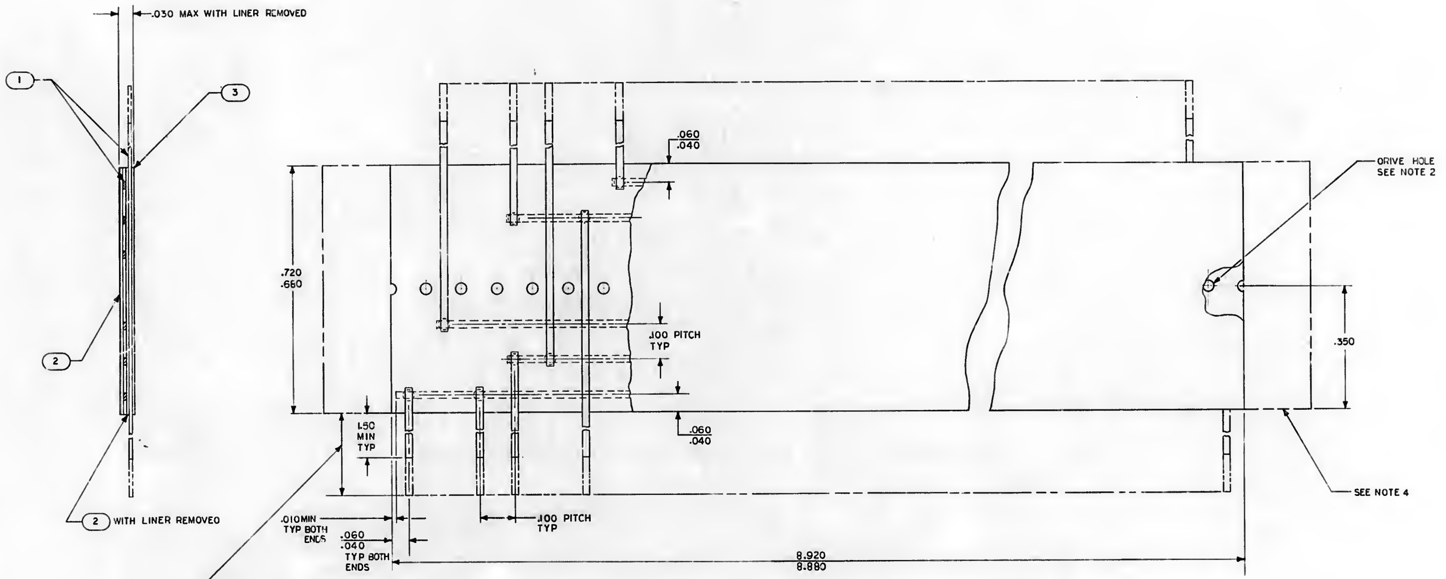
CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003129
SCALE 2/1
WT
SHEET 1 OF 1

1003129 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS 02394

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISEO PER TDRR 04313	10-30-63	



ALLOW EXCESS LENGTH FOR STORAGE AND HANDLING
LEADS MAY BE HELD TOGETHER BY TAPE OR
OTHER METHODS TO BE REMOVED AT NEXT ASSY

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBEO BY MIL-D-70327
2. FABRICATE PER ND1002030
3. * OENOTES LENGTH IN FEET
4. INOICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY ANO IS TO BE REMOVEO AT NEXT ASSY

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
*	1.0	1006806-15	INSULATION TAPE, ELECTRICAL	3
*	2.0	1006806-14	INSULATION TAPE, ELECTRICAL	2
	AR	1006757-7	WIRE, ELECTRICAL .005 X .020	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1003131	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 9/17/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
ROPE STRAND SELECT MODULE

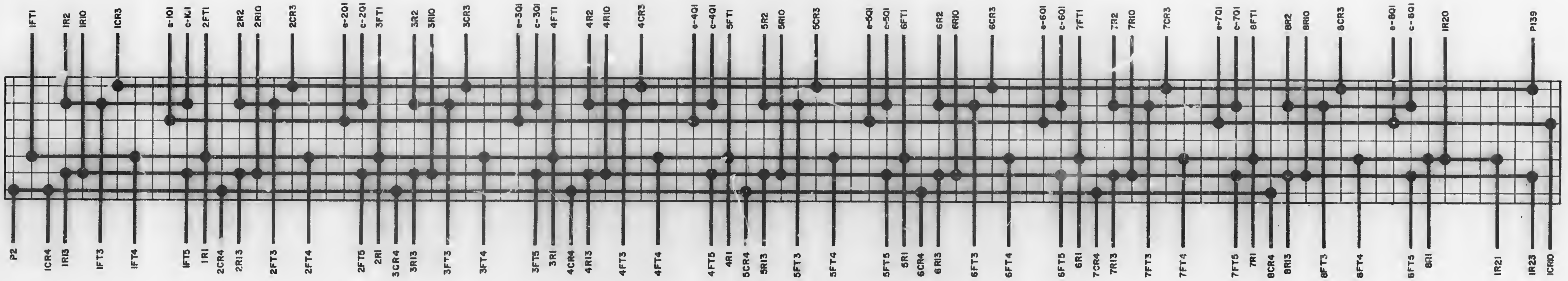
CODE IDENT NO. —
SIZE E
NASA DRAWING NO. 1003130
SCALE 8/1
WT
SHEET 1 OF 2

1003130 A

NOTICE — [illegible]

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06375		

REVISIONS 02354



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT

DRAWN DATE 7-25-68
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 8/7/68
MIT APPROVAL

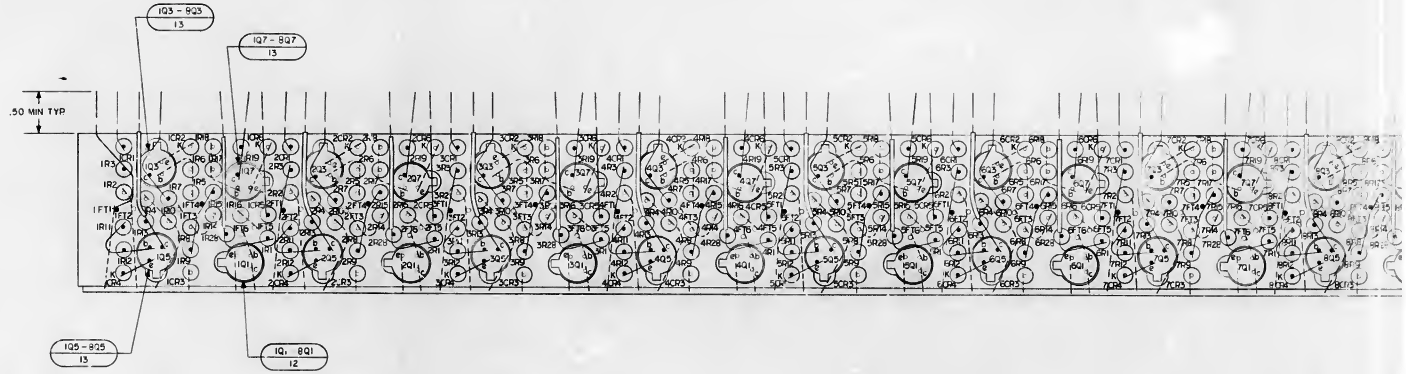
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

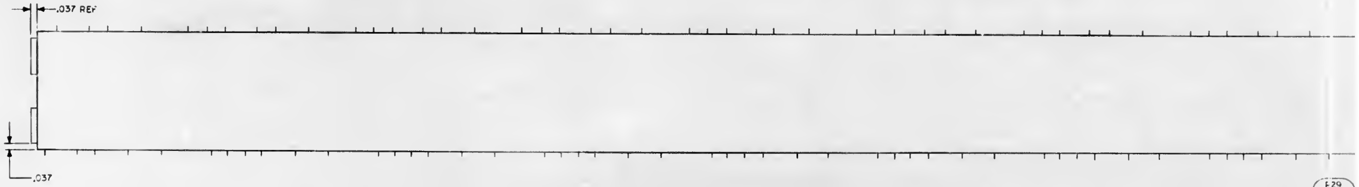
MATRIX ASSY
ROPE STRAND SELECT MODULE

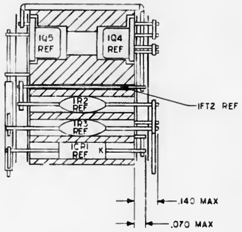
CODE IDENT NO. —
SIZE E
NASA DRAWING NO 1003130
SCALE 4:1
WT
SHEET 2 OF 2

1003130 A

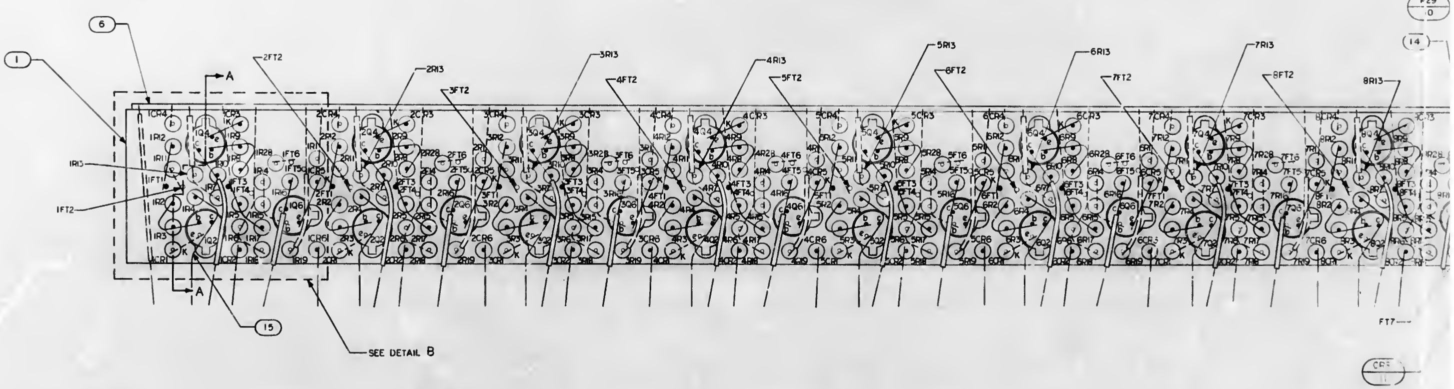
[illegible]





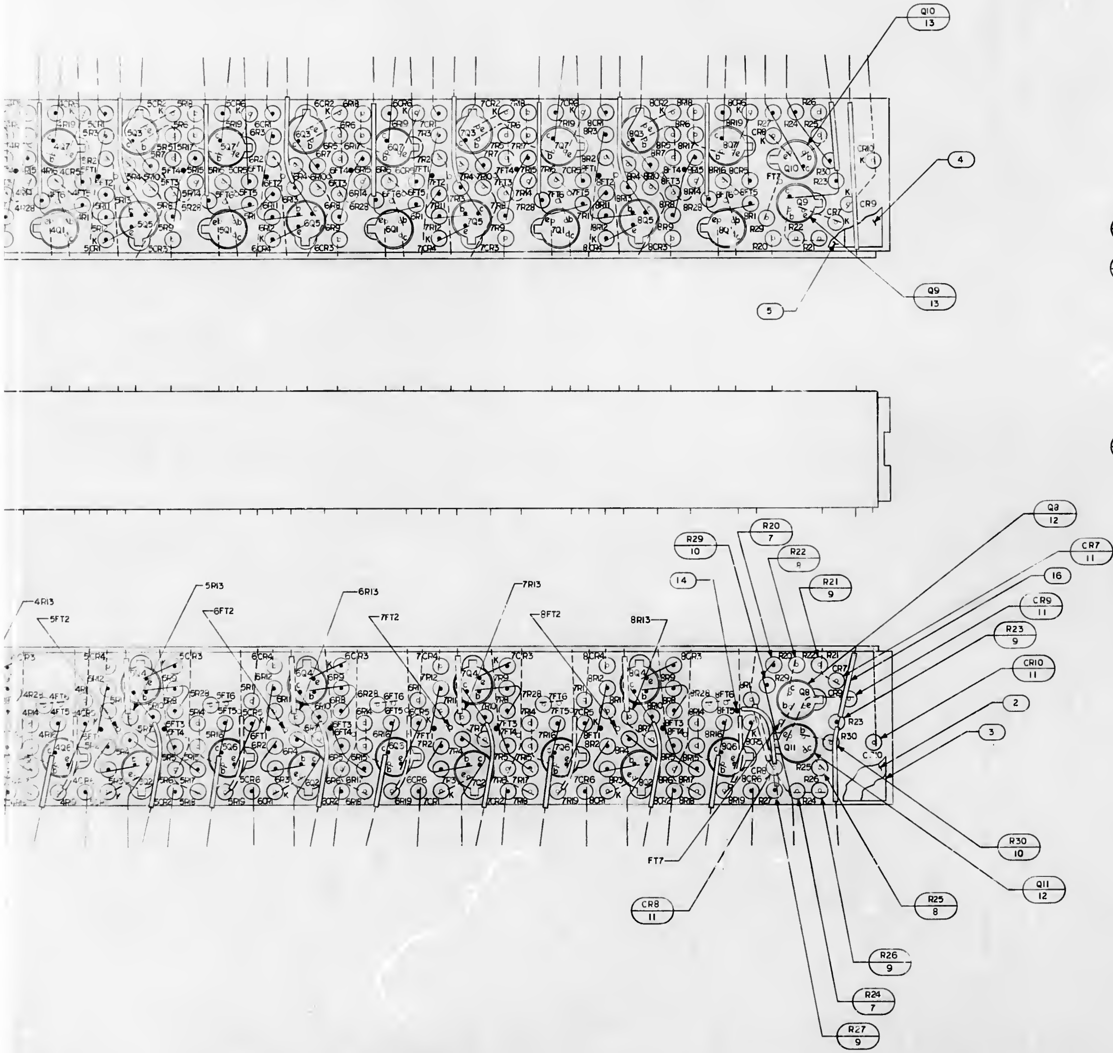


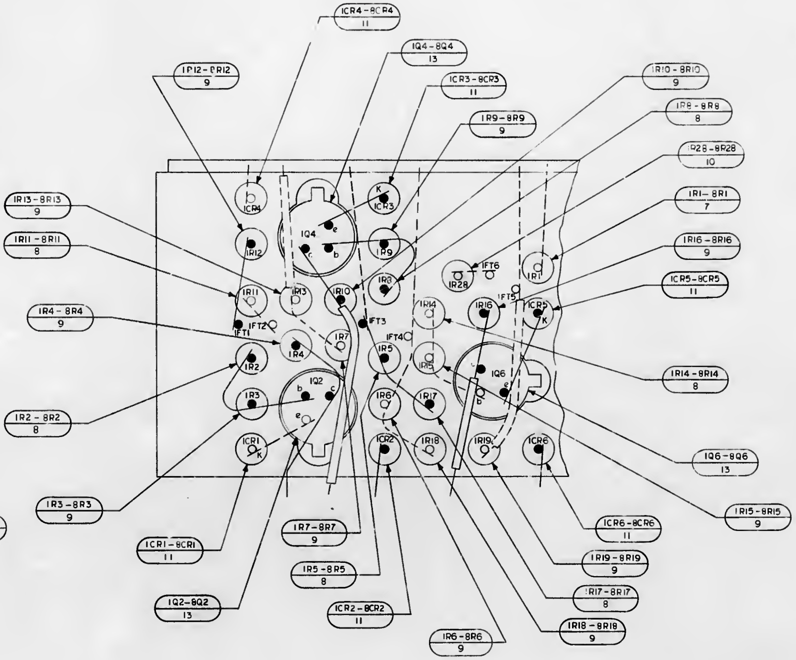
SECTION A-A
SCALE: 4/1



NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
4. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. DASHED LINES INDICATES FIRST LEVEL WIRING AND SOLID LINE INDICATES SECOND LEVEL WIRING
6. STAKE ALL COMPONENTS PER ND1002009
7. K INDICATES CATHODE SIDE OF DIODE
8. F.T. DENOTES FEED THRU
9. A.R. DENOTES AS REQUIRED

SYM	REVISIONS 52344 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05753		
B	REVISED PER TDRR 08407 OR CHK	5/11/64	HVC





DETAIL B
SCALE: 8/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
REF	1006099	SCHEMATIC	
AR	1006776-22	INSULATION SLEEVING	16
AR	1006757-1	WIRE, ELECTRICAL .010 X .020	15
AR	1006757 8	WIRE, ELECTRICAL .020 DIA	14
50	1006753	TRANSISTOR	13
10	1006752	TRANSISTOR	12
52	1006751	DIODE	11
10	1006750-15	RESISTOR	10
100	1006750 [illegible]	RESISTOR	9
50	1006750-32	RESISTOR	8
10	1006750-43	RESISTOR	7
1	1003130	MATRIX ASSY	6
1	1004227-2	INSULATOR	5
1	1004227-1	INSULATOR	4
1	1004226-2	INSULATOR	3
1	1004226-1	INSULATOR	2
1	1004195	HOLDER, COMPONENT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003132	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

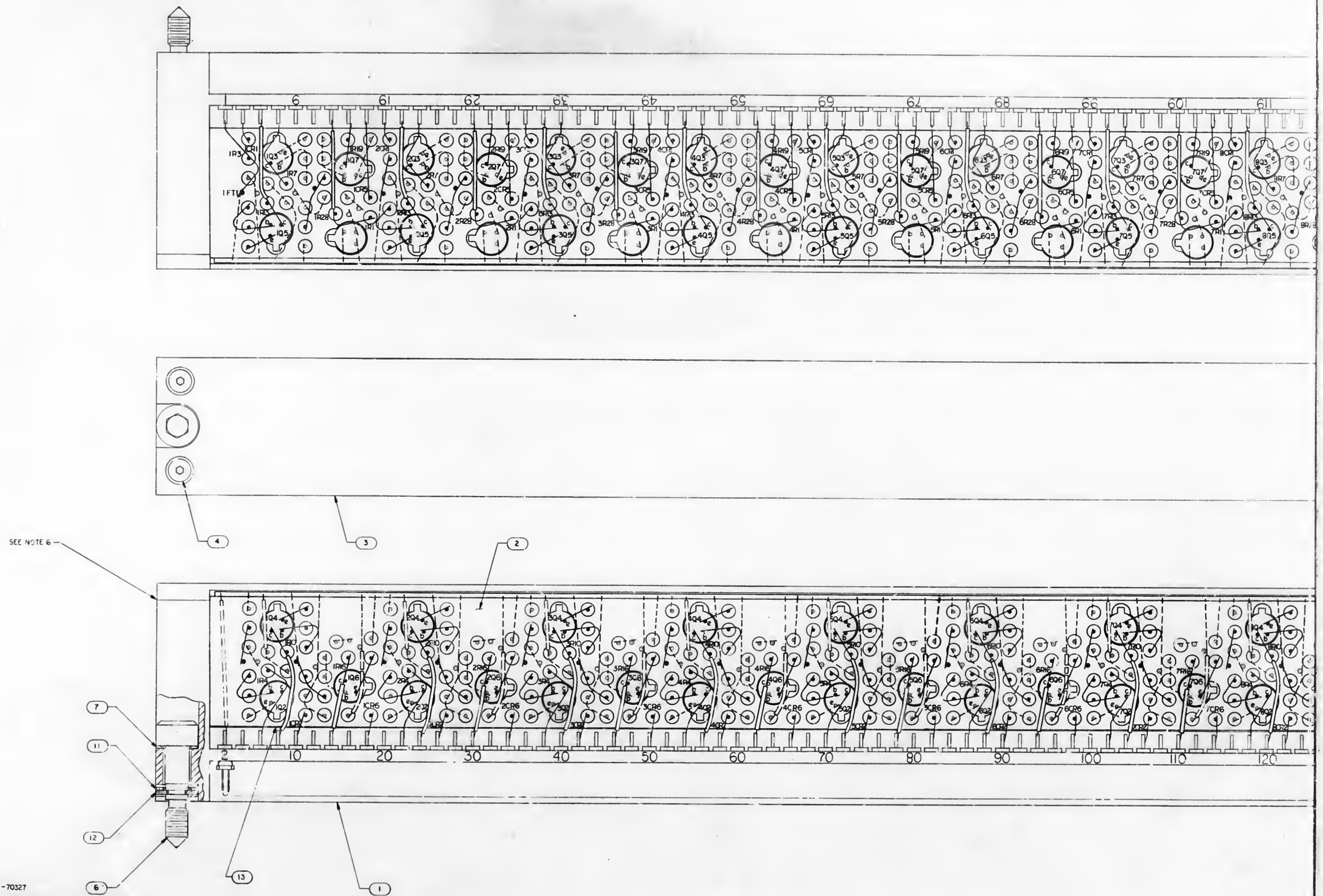
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN DATE 7-24-63
CHECKED
APPROVAL 8-7-63
APPROVAL 8-7-63
NASA APPROVAL 8/7/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ROPE STRAND SELECT MODULE SUB-ASSEMBLY

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003131
SCALE 4/1
WT
SHEET 1 OF 1

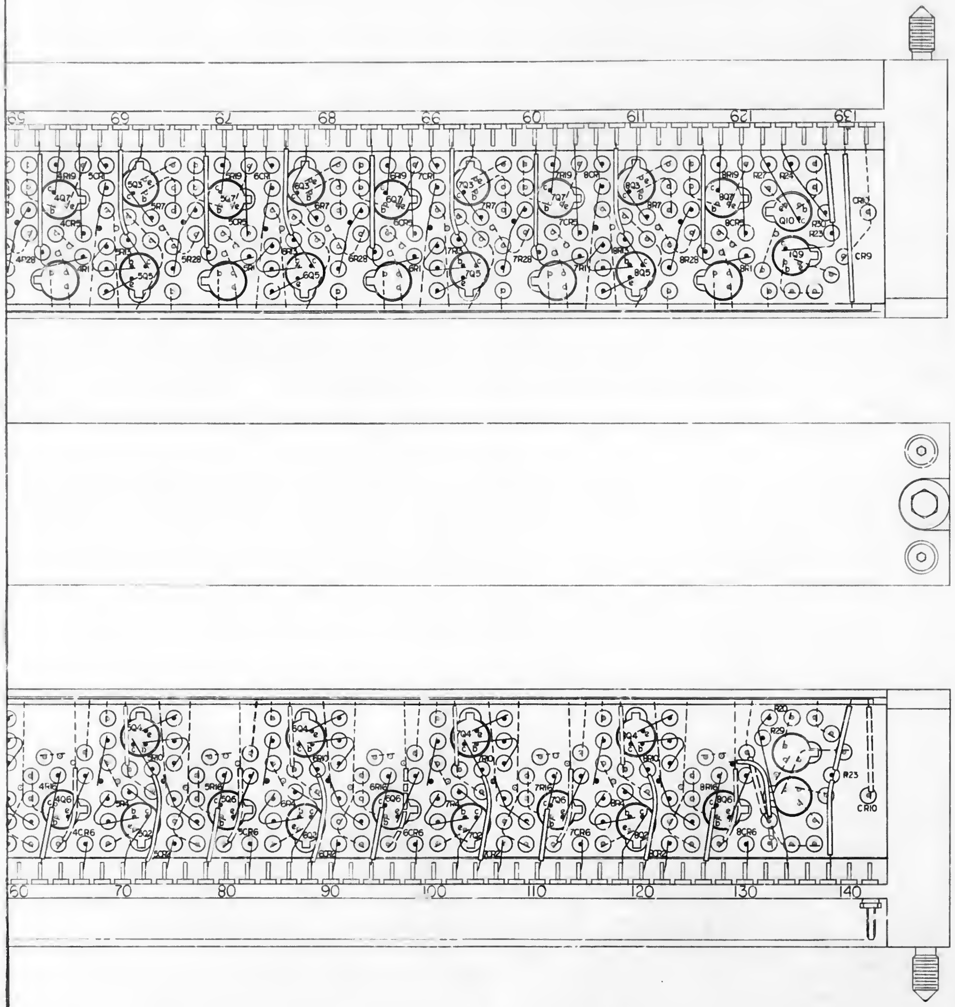


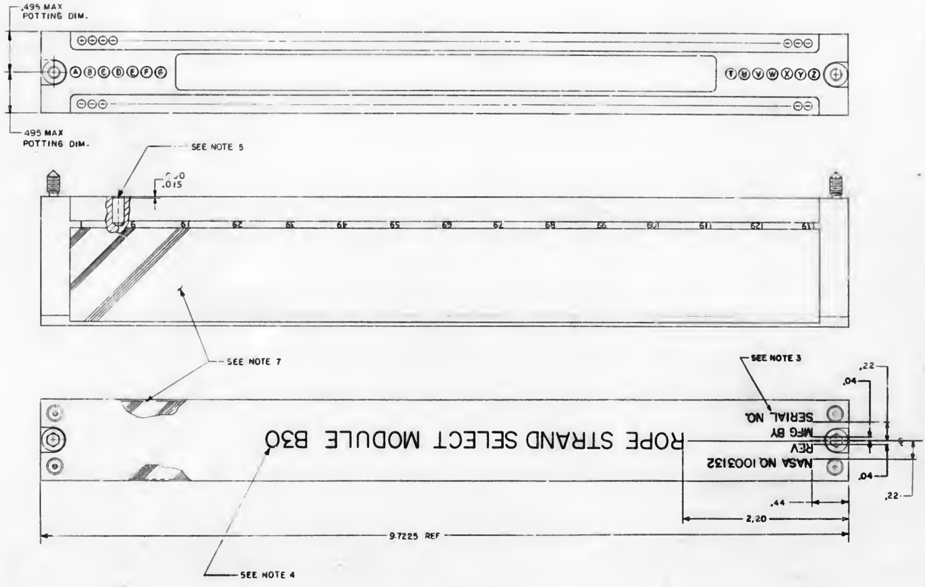
NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRECRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
4. MARK .250 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2
5. FILL KEYING HOLES MARKED A,B,D,E,T,U,V,X USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183
6. APPLY FIND NO. 10 TO INTERFACE PRIOR TO ASSEMBLY
7. ENCAPULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
8. BOND FIND NO. 2 TO FIND NO. 1 USING FIND NO. 13
9. AR DENOTES AS REQUIRED

1003132	K

1003132 K

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02854	9/26/63	
B	REVISED PER TDRR 03639	10-3-63	
C	REVISED PER TDRR 04390		
D	REVISED PER TDRR 04775		
E	REVISED PER TDRR [illegible]		
F	REVISED PER TDRR 05635		
G	REVISED PER TDRR 05785	1/31/64	
H	REVISED PER TDRR 11243 DR CHK RTM	9/10/64	
J	REVISED PER TDRR 12310 DR CHK RTM	9/24/64	
K	REVISED PER TDRR 13080 DR CHK RTM		





MARKING VIEW
SCALE 2/1

QTY REQ'D	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1006099	SCHEMATIC	REF
AR	1006806-4	TAPE, ELECTRICAL	13
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	12
2	1004546-3	WASHER, FLAT	11
AR	1006879	SILICONE COMPOUND THERMOCONDUCT	10
~~8~~	~~1004117~~	~~PLUG, [illegible]ING~~	~~9~~
~~2~~	~~MS39086-400~~	~~PIN, SPRING~~	~~8~~
2	1004546-1	WASHER, FLAT	7
2	1004579-1	SCREW, JACKING	6
~~2~~	~~1004207~~	~~DRIVE CYLINDER~~	~~5~~
4	1006273-11	SCREW, CAP, BUTTON HD	4
1	1003112	COVER	3
1	1003131	ROPE STRAND SELECT MODULE SUBASSY	2
1	1003128	HEADER HOUSING ASSY	1

LIST OF MATERIALS

1003184	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

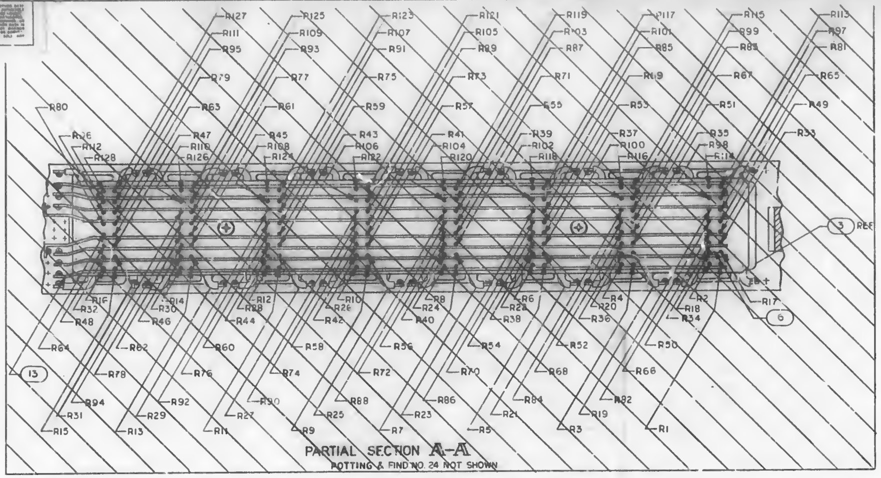
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 8/17/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

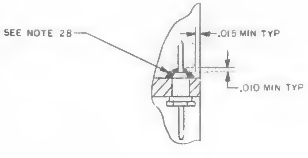
ROPE STRAND SELECT B30 MODULE ASSY

CODE IDENT NO — SIZE J NASA DRAWING NO 1003132
SCALE 4/1 WT SHEET 1 OF 1

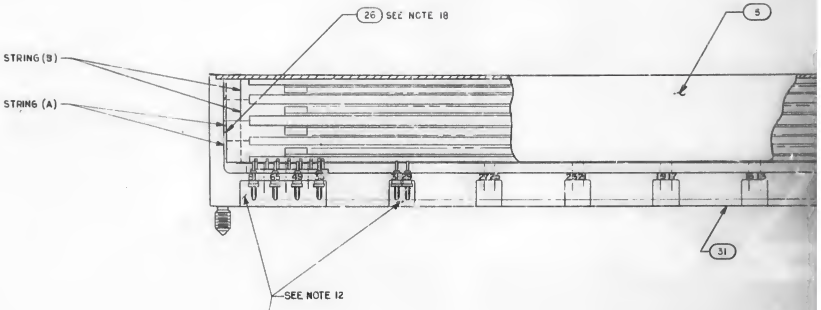
1003132 K

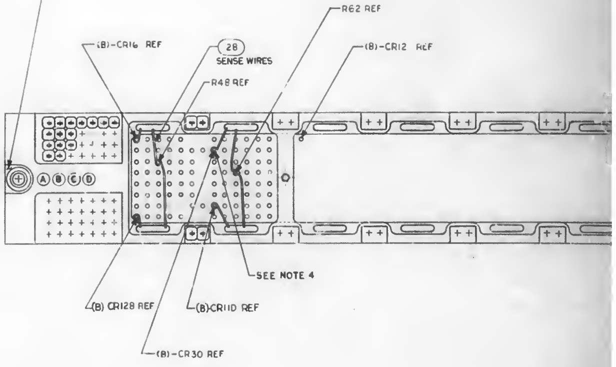


PARTIAL SECTION A-A
POTTING & FIND NO. 24 NOT SHOWN



SECTION C-C
SCALE: 4/1
88 PLACES





NOTES :

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

~~2. ALL WELDED CONNECTIONS TO BE MADE PER ND 1002008 AND ND 1002003~~

3. WIRE PER ND 1002029

4. ALL SOLDERING CONNECTIONS TO BE MADE PER ND 1002071 EXCEPT DO NOT TIN LEADS OF FIND NO.28 & SOLDER WRAPS TO BE 2-4 TURNS USING FIND NO.28

~~5. BOND FIND NO.10 TO FIND NO.4 PER ND 1002004 TYPE I~~

~~6. BOND FIND NO.9 TO FIND NO.4 USING 1011541~~

7. FILL KEYING HOLES AS INDICATED IN CHART WITH THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183 EXCEPT DO NOT EVACUATE AFTER FILLING HOLES

~~8. WHITE DOT DENOTES LEAD TO BE CUT FOR FIRST LEVEL WIRING~~

~~9. BLACK DOT DENOTES LEAD TO BE CUT FOR SECOND LEVEL WIRING~~

~~10. K DENOTES CATHODE SIDE OF DIODE~~

11. AR DENOTES AS REQUIRED

12. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND

13. ENCAPSULATE MODULE PER ND 1002226 INDICATED AREA ONLY

14. MARK .10/.08 HIGH WHITE PER ND 1002019 & ND1002122 TYPE II CLASS 2 USING MARKING INK 1006271-1 SERIALIZE PER ND 1002023

15. MARK .26/.24 HIGH WHITE PER ND 1002019 & ND1002122 TYPE II CLASS 1 USING MARKING INK 1006271-1

16. MARK APPROPRIATE MODULE NUMBER IN ACCORDANCE WITH CHART PER NOTE 15

~~17. SELECT FIND NO.10 NOTED "(A)" AND "(B)", EXAMPLE (A)-CR6 AND (B)-CR6, PER THE ELECTRICAL REQUIREMENTS AT A FORWARD CURRENT OF 1.0 MA ± 2%, AND AT A FORWARD CURRENT OF 3.0 MA ± 2% THE VOLTAGE DROP ACROSS BOTH DIODES SHALL BE WITHIN 1 MV OF EACH OTHER~~

18. USE PART OF FIND NO. 26 TO ELIMINATE SPACE BETWEEN HOLDER AND INSIDE OF HEADER, BOTH ENDS

19. ASSEMBLE FIND NO. 15 TO CORE HOLDERS USING MIL-S-40083 CLASS 31

~~20. WIRE PER WIRING DIAGRAM (SEE SHEET 4)~~

~~21. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREAS ONLY~~

~~22. MIL-W-3861 TYPE , 24 AWG AND TINNED~~

23. SENSE LINE WIRING PER MODULE DECK NO. DESIGNATED

~~24. MARK APPLICABLE PROGRAM NO. ONLY. DASH NO. NOT REQUIRED.~~

25. BOND FIND NO. 5 TO FIND NO. 1 PER ND 1002004 TYPE II

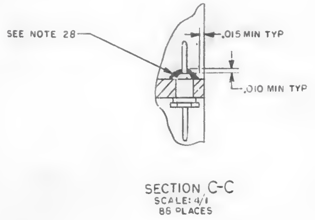
26. BOND IN APPOXIMATE AREAS SHOWN BOTH SIDES

~~27. STAKE FIND NO. [illegible] TO FIND NO. [illegible] PER ND1002008~~

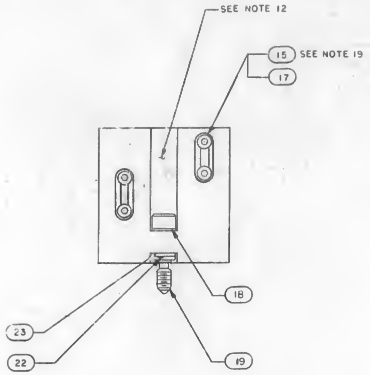
28. SEAL TERMINAL INSULATORS AND TERMINALS TO HEADERS USING 1011541

1003133 T	SHEET 1 of 2

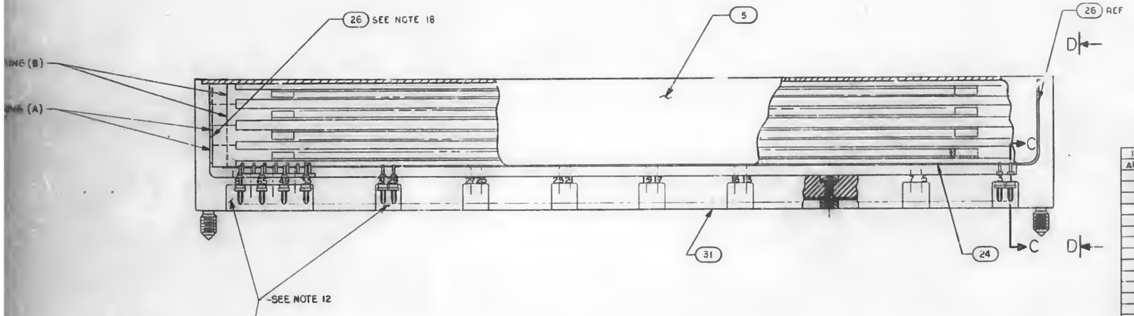
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 03451	9-26-63	
B	REVISED PER TDRR 03632	10-3-63	WR
C	REVISED PER TDRR 04346	10-21-63	WR
D	REVISED PER TDRR 04616	11-13-63	WR
E	REVISED PER TDRR 04734	11-19-63	
F	REVISED PER TDRR 05388	12-27-63	
G	REVISED PER TDRR 07648	[illegible]	
H	REVISED PER TDRR 09951	[illegible]	WR
J	REVISED PER TDRR 10376	5/8/64	WR
K	REVISED PER TDRR 11243	3 AUG 64	
L	REVISED PER TDRR 10733	3 AUG 64	
M	REVISED PER TDRR 11487	3 AUG 64	
N	REVISED PER TDRR 11772	4 AUG 64	WR
P	REVISED PER TDRR 12303	9/1/64	
R	REVISED PER TDRR 13682	[illegible]	
S	REVISED PER TDRR 14350	11 Nov 64	WR
T	REVISED PER TDRR 17468	[illegible]	

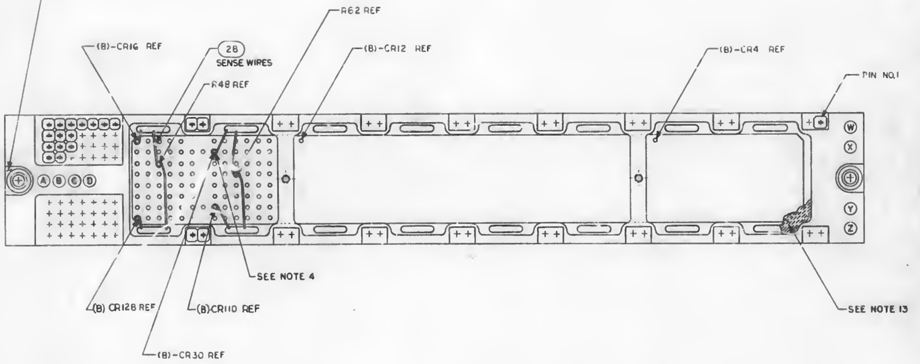


SECTION C-C
SCALE: 4/1
86 PLACES



VIEW D-D





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AR																						SEE NOTE 23	MODULE DECK NO. 0022	REF
	AR																						0021	REF
		AR																					0020	REF
			AR																				0019	REF
				AR																			0018	REF
					AR																		0017	REF
						AR																	0016	REF
							AR																0015	REF
								AR															0014	REF
									AR														0013	REF
										AR													0012	REF
											AR												0011	REF
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														AR									0008	REF
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																AR							0006	REF
																	AR						0005	REF
																		AR					0004	REF
																			AR				0003	REF
																				AR			0002	REF
																					AR	SEE NOTE 23	MODULE DECK NO. 0001	REF
																					☒	~~SEE NOTE 22~~	~~WIRE, ELECTRICAL~~	30
																					☒	~~NAS 1291-24-9~~	~~WIRE, ELECTRICAL~~	29
AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	1006275-2	WIRE, ELECTRICAL	28
		~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~2~~	~~1000043-2~~	~~SCREW, BUTTON HD~~	~~27~~
AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	1004623-2	SHIM	26
		~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~1006778-22~~	~~SLEEVING~~	~~25~~
		REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	1006144	SCHEMATIC	☒
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2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	22
																					~~2~~	~~MS39086-100~~	~~PIN, SPRING~~	~~21~~
																					~~2~~	~~1004207~~	~~SCREW, EJECTION DRIVE CYLINDER~~	~~20~~
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1004579-1	SCREW, JACKING	19
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1004546-1	WASHER, FLAT	18
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	1004237	WASHER, FLAT	17
																					~~2~~	~~1000104-1~~	~~SCREW, FLAT HEAD~~	~~16~~
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	1006783-11	SCREW, BUTTON HEAD	15
		~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~AR~~	~~1006275-4~~	~~WIRE, ELECTRICAL~~	~~14~~
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																					~~AR~~	~~1004117~~	~~PLUG, KEYING~~	~~8~~
																					~~1~~	~~1004235-1~~	~~INSULATOR~~	~~7~~
		~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1004236-3~~	~~INSULATOR~~	~~6~~
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		~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~4~~	~~1004233~~	~~HOLDER, CORE~~	~~4~~
		~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1004232~~	~~HOLDER, COMPONENT~~	~~3~~
																					~~1~~	~~1004231~~	~~COVER~~	~~2~~
		~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~[illegible]-011~~	~~[illegible] ASSEMBLY~~	~~1~~
22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	QTY 1	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
B29	B28	B28	B21	B29	B28	B21	B29	B28	B21	B29	B28	B24	B23	B22	B21	B22	B21	B29	B28	B22	B21	LIST OF MATERIALS		

1021102	
1021101	
1021100	
1003203	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

M I T
INSTRUMENTATION LAB
Cambridge Mass
DRAWN DATE AUG 63
CHECKED
APPROVAL 1 AUG 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ROPE MEMORY MODULE ASSEMBLY

CODE IDENT NO — | SIZE J | NASA DRAWING NO. 1003133
SCALE 2/1 | WT | SHEET 1 OF 2

[illegible]

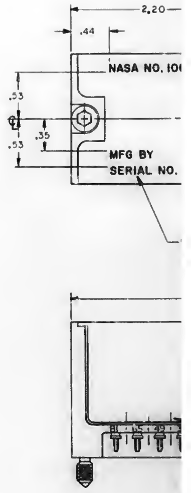
42

D

C

B

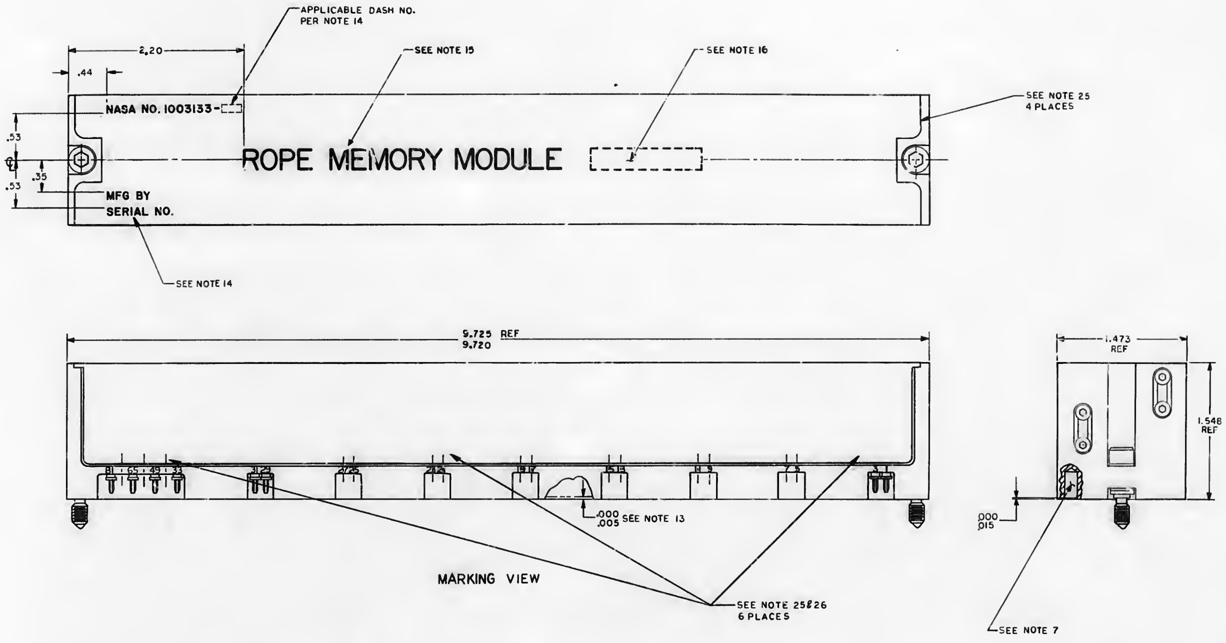
A



KEYIN
MODULE NO.
B21
B22
B23
B24
B28
B29

1003133 T

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 07831	9-26-6[illegible]	
B	REVISED PER TDRR 07632		
C	REVISED PER TDRR [illegible]	10-3-63	
D	REVISED PER TDRR [illegible]	11-3-63	
E	REVISED PER TDRR [illegible]	[illegible]	
F	REVISED PER TDRR 05388	12-27-63	
G	REVISED PER TDRR [illegible]	[illegible]	
H	REVISED PER TDRR 08851	[illegible]	
J	REVISED PER TDRR [illegible]	[illegible]	
K	REVISED PER TDRR 11243	3 AUG 64	
L	REVISED PER TDRR 10733	3 AUG 64	
M	REVISED PER TDRR 11487	12 AUG 64	
N	REVISED PER TDRR 11772	[illegible]	
P	REVISED PER TDRR 12303	9/1/64	
R	REVISED PER TDRR 13687	[illegible]	
S	REVISED PER TDRR 14350	[illegible]	
T	REVISED PER TDRR 17460	[illegible] 65	



KEYING INFORMATION							
MODULE NO.	KEYING HOLES						
B21	A	B	Y	Z			
B22	A	D	X	Z			
B23	A	C	W	Z			
B24	B	C	X	Y			
B28	B	D	Y	W			
B29	C	D	W	X			

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	ITEM NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN DATE AUG 1963
CHECKED
APPROVAL 13 AUG 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ROPE MEMORY MODULE ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003133
SCALE 2/1
WT
SHEET 2 OF 2

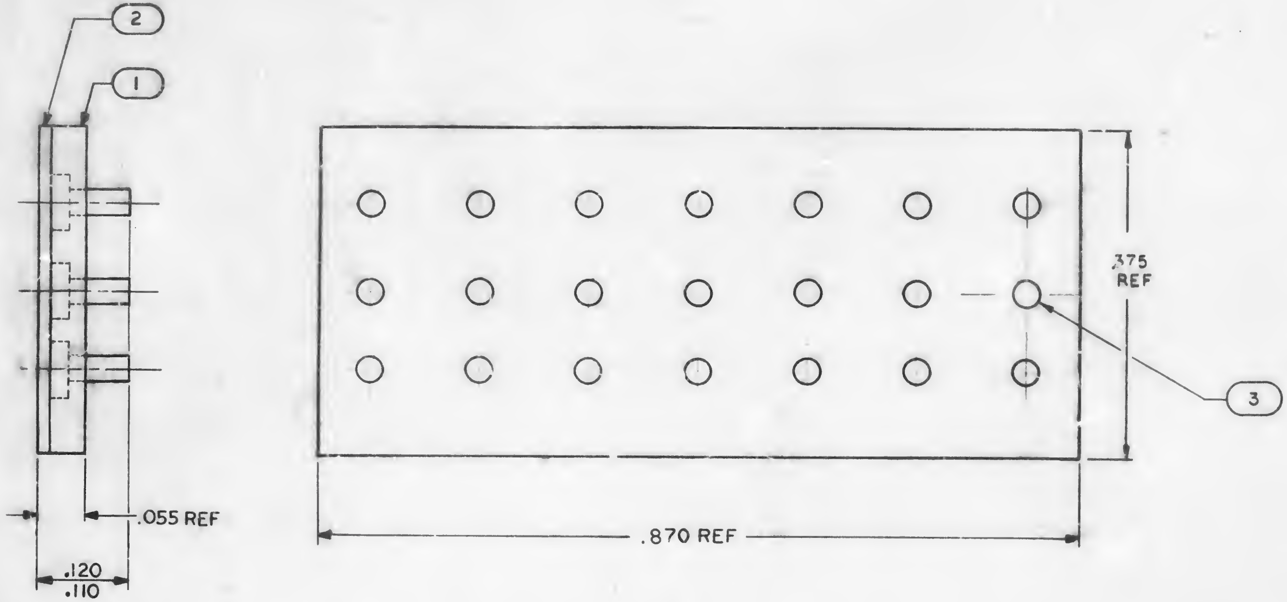
1003133 T

1003133 T SHEET 2 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 02544

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03451	9-26-63	
B	REVISED PER TDRR 13133 DR CHK	4 JUN 64	



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. INSERT FIND NO.3 INTO FIND NO.1
3. BOND FIND NO.2 TO FIND NO1 AS SHOWN PER ND1002004

MASTE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
~~6~~	~~1004230-2~~	~~TERMINAL~~	~~4~~
21	1004230-1	TERMINAL	3
1	1004228	INSULATOR	2
1	1004229	TERMINAL BOARD	1

LIST OF MATERIALS

1003133	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN Tom DATE 1 AUG 63
CHECKED
APPROVAL W Turner 6 AUG 63
APPROVAL
NASA APPROVAL Jack Barnard
MIT APPROVAL W Kupfer 14 Aug 63

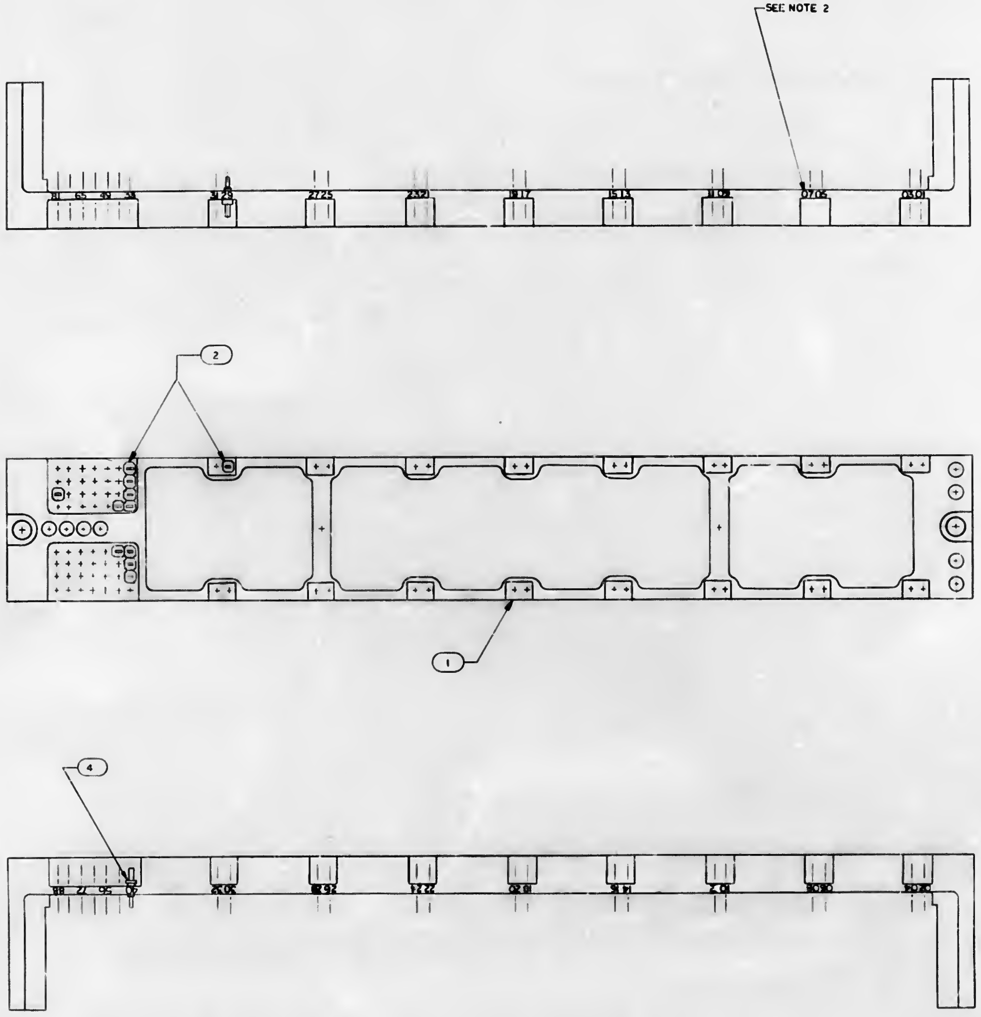
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL BOARD ASSEMBLY
ROPE MEMORY MODULE

CODE IDENT NO. ——
SIZE C
NASA DRAWING NO. 1003134
SCALE 10/1
WT
SHEET 1 OF 1

NOTICE: [illegible]

REVISIONS 0254-			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR [illegible]	4-26-63	
B	REVISED PER TDRR 04757		
C	REVISED PER TDRR 05184		
D	REVISED PER TDRR 10123 DR CHK R.H.E.	4 JUN 64	
E	REVISED PER TDRR 13995 DR CHK R.H.E.	12/2/64	



NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK .060/.080 HIGH PER ND1002019 AND ND1002122 TYPE II CLASS I, USING WHITE MARKING INK 1006271-1
3 INSTALL FIND NO.2, AND FIND NO.4 PER ND1002136

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
88	1006776	INSULATOR, WRAPOST, MALE, MIN	4
~~8~~	~~1006782-6~~	~~CONTACT, WRAPOST, MALE MIN~~	~~3~~
88	1006782-1	CONTACT, WRAPOST, MALE MIN	2
1	1004231	HEADER HOUSING	1

LIST OF MATERIALS

1003133	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE 23Jul63
CHECKED A.R. Pagni 26Jul63
APPROVAL
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 14Aug63

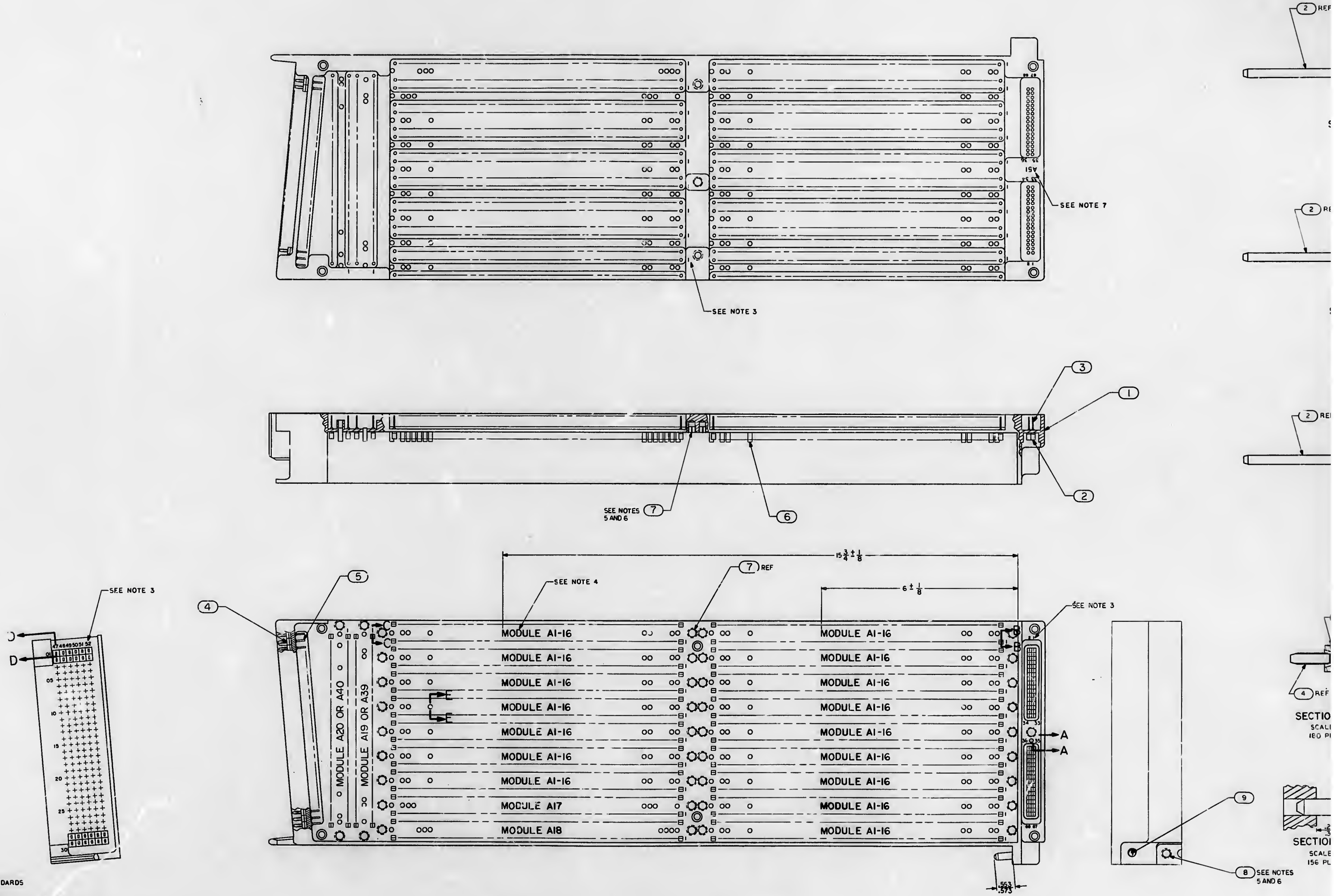
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

HEADER ASSY
ROPE MEMORY MODULE

CODE IDENT NO	SIZE	NASA DRAWING NO
—	F	1003135

SCALE 2/1 WT SHEET 1 OF 1

[illegible]

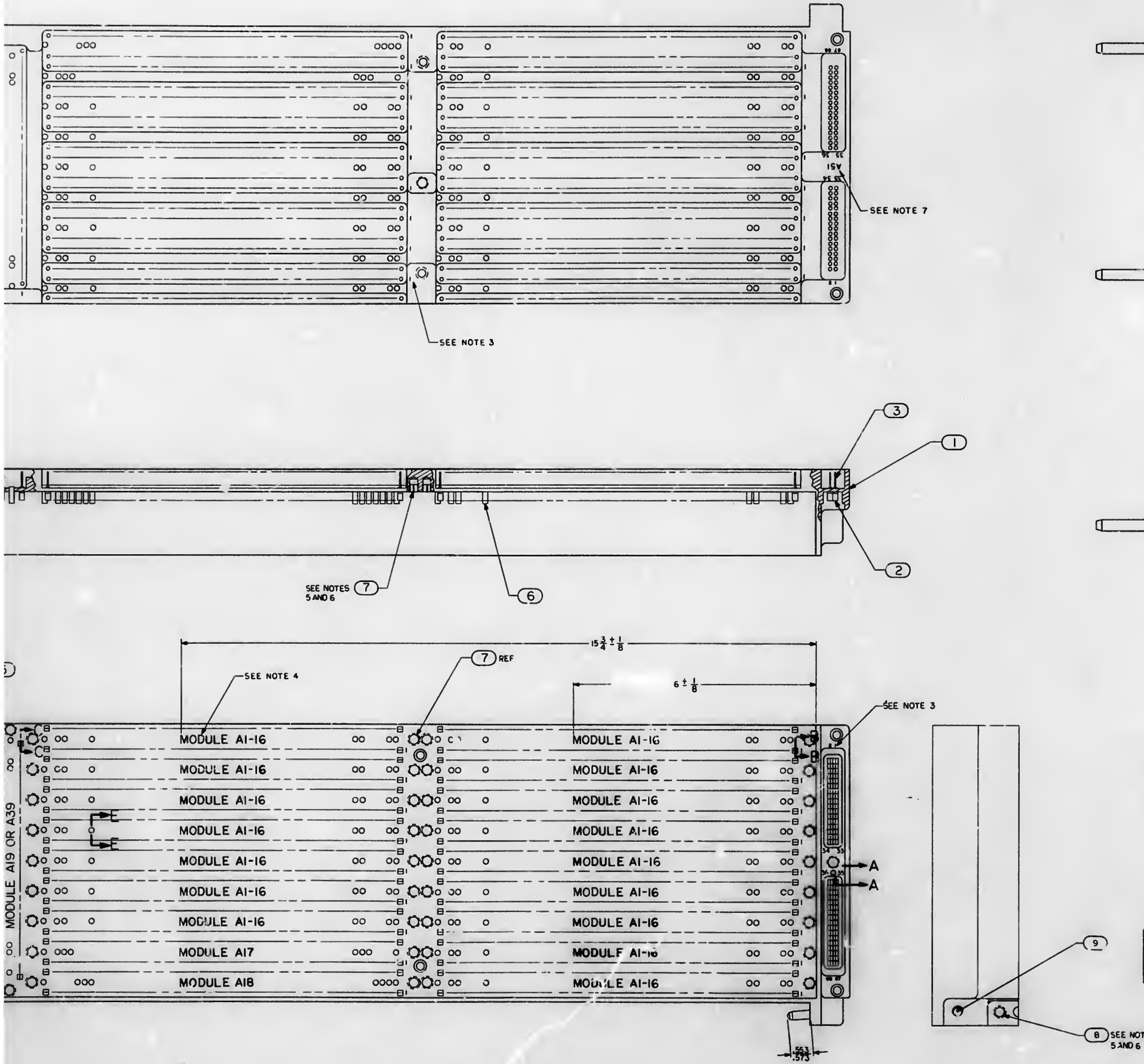


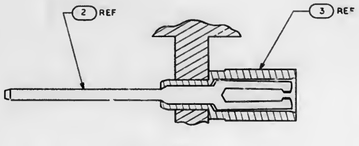
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. INSTALL FIND NOS. 2, 3, 4, AND 5 PER ND1002136
3. MARK .100/.060 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
4. MARK .167/.207 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
5. COAT THREAD OF FIND NO'S 1, 7 AND 8 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. INSTALL FIND NO'S 7 AND 8 PER ND1002121
7. MARK .140/.100 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I

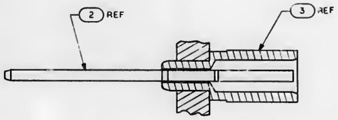
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISEO PER TORR 05112	12/14/	

REVISIONS 05316

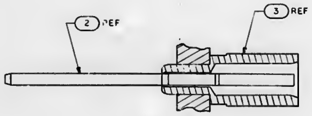




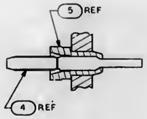
SECTION B-B
SCALE 10/1
2556 PLACES



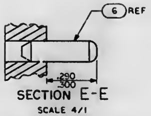
SECTION A-A
SCALE 10/1
68 PLACES



SECTION C-C
SCALE 10/1
188 PLACES



SECTION D-D
SCALE 4/1
180 PLACES



SECTION E-E
SCALE 4/1
156 PLACES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1010620-3	PIN GUIOE	9
1	NASA1394CA-08L	INSERT, THREADED	8
41	1006702-5	INSERT, THREAOED, SELF-LOCKING	7
156	1004248	PIN, KEYING	6
180	1010383-1	INSULATOR, WRAPOST, MALE	5
180	1006996-6	CONTACT, BLAOE EDGE CONN	4
2812	1006774	INSULATOR, WRAPOST, FEMALE, MIN	3
2812	100 781-2	CONTACT, WRAPOST, FEMALE, MIN	2
1	1003126-2	TRAY A, MATCHED MACHINED	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

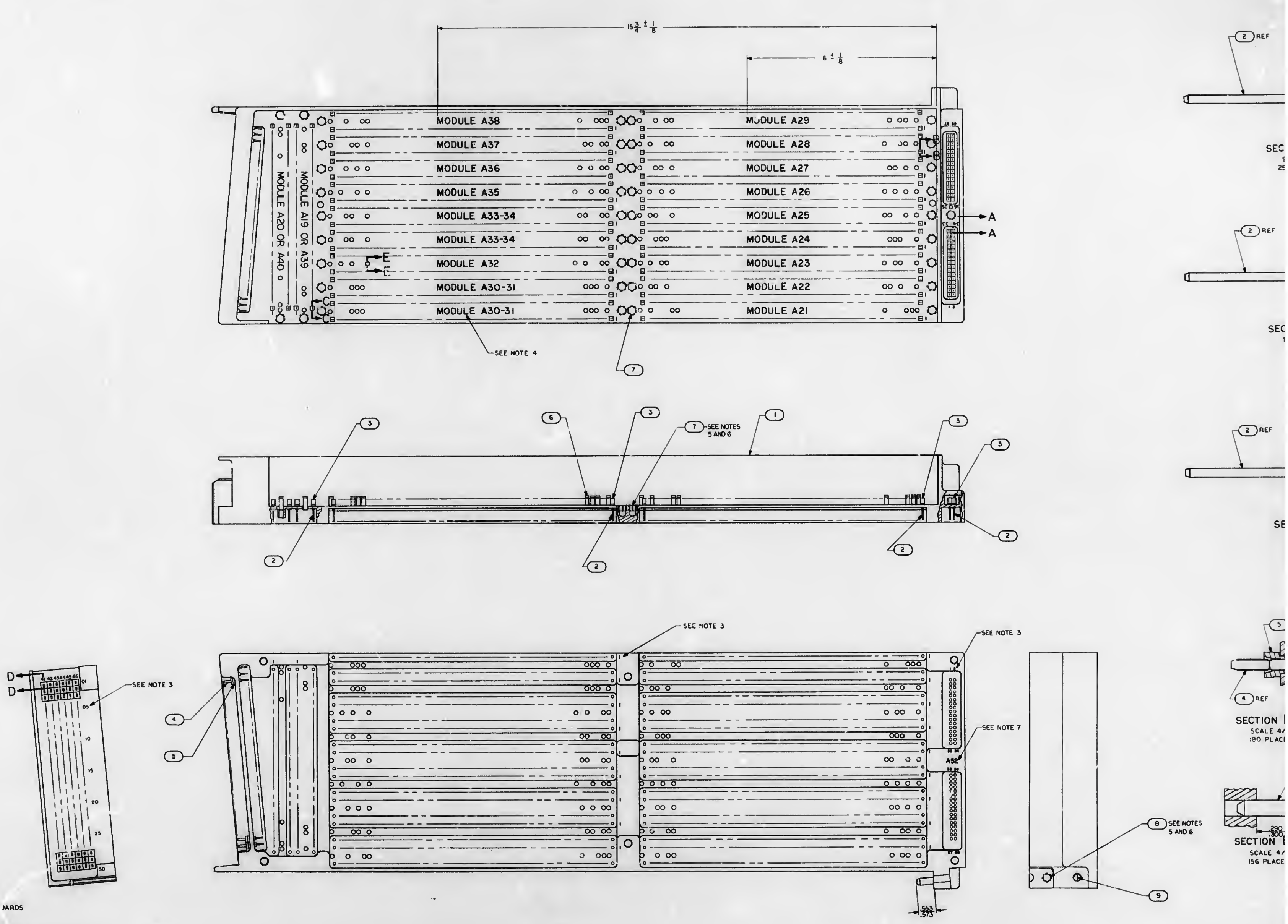
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS ± —//— ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE
CHECKED
APPROVAL
APPROVAL B J Duggan 10-30-63
NASA APPROVAL
MIT APPROVAL W Kay 6-30-65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY A SUBASSEMBLY
LEFT HAND

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003136
SCALE 1/1
WT
SHEET 1 OF 1

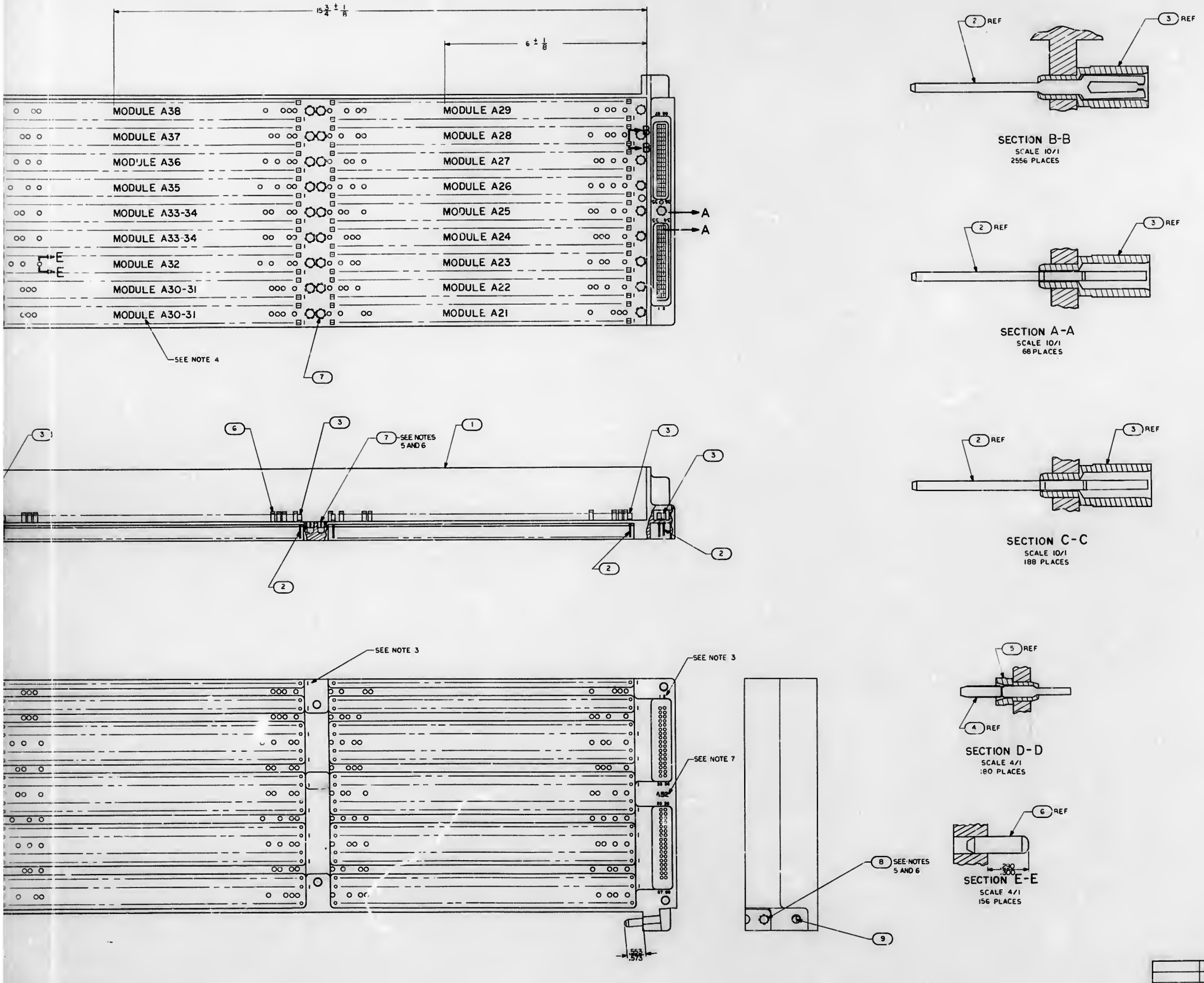


NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. INSTALL FIND NOS. 2, 3, 4 AND 5 PER ND1002136
3. MARK .100/.060 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
4. MARK .167/.207 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
5. COAT THREAD OF FIND NO'S 1, 7 AND 8 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. INSTALL FIND NO'S 7 AND 8 PER ND1002121
7. MARK .140/.100 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I

1003137 A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER 1DRR 05112	12/10/63	



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1010620-3	PIN GUIDE	9
1	NAS1394CA-08L	INSERT, THREADED	8
41	1006702-5	INSERT, THREADED, SELF-LOCKING	7
156	1004248	PIN, KEYING	6
180	1010383-1	INSULATOR, WRAPOST, MALE	5
180	1006996-6	CONTACT, BLADE EDGE CONN	4
2812	1006774	INSULATOR, WRAPOST, FEMALE, MIN	3
2812	1006781-2	CONTACT, WRAPOST, FEMALE, MIN	2
1	1003126-1	TRAY A, MATCHED MACHINED	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

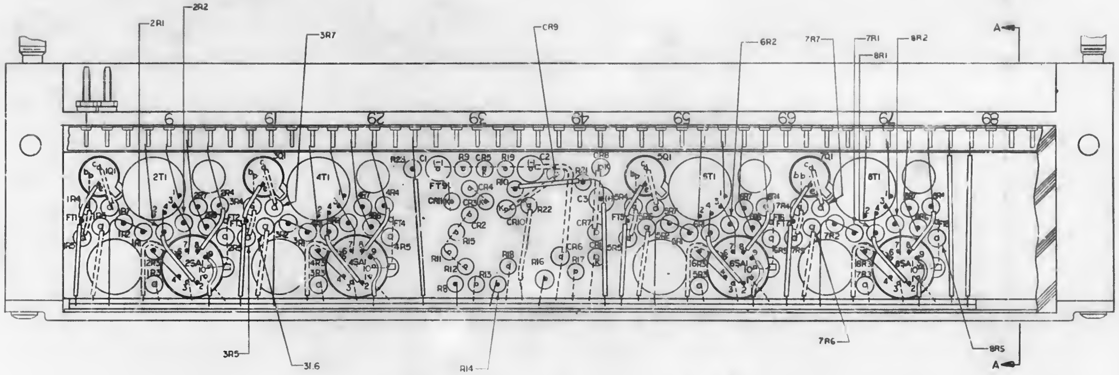
DRAWN DATE 2/20/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 30 Oct 63

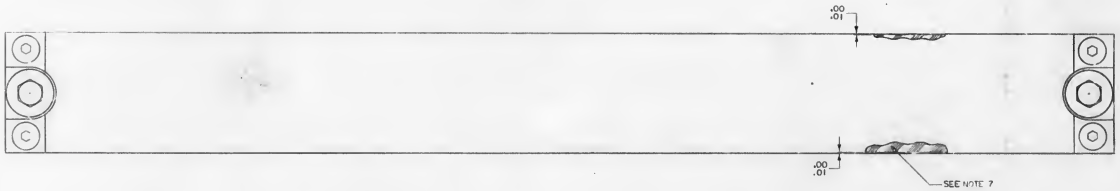
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

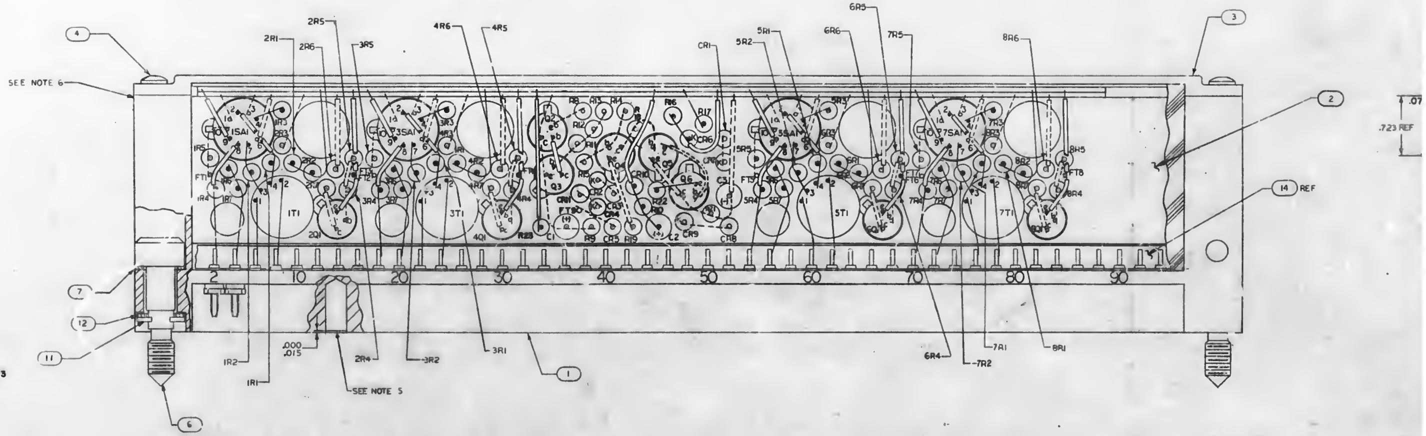
TRAY A SUBASSEMBLY
RIGHT HAND

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003137
SCALE 1/1
WT
SHEET 1 OF 1

1003137 A







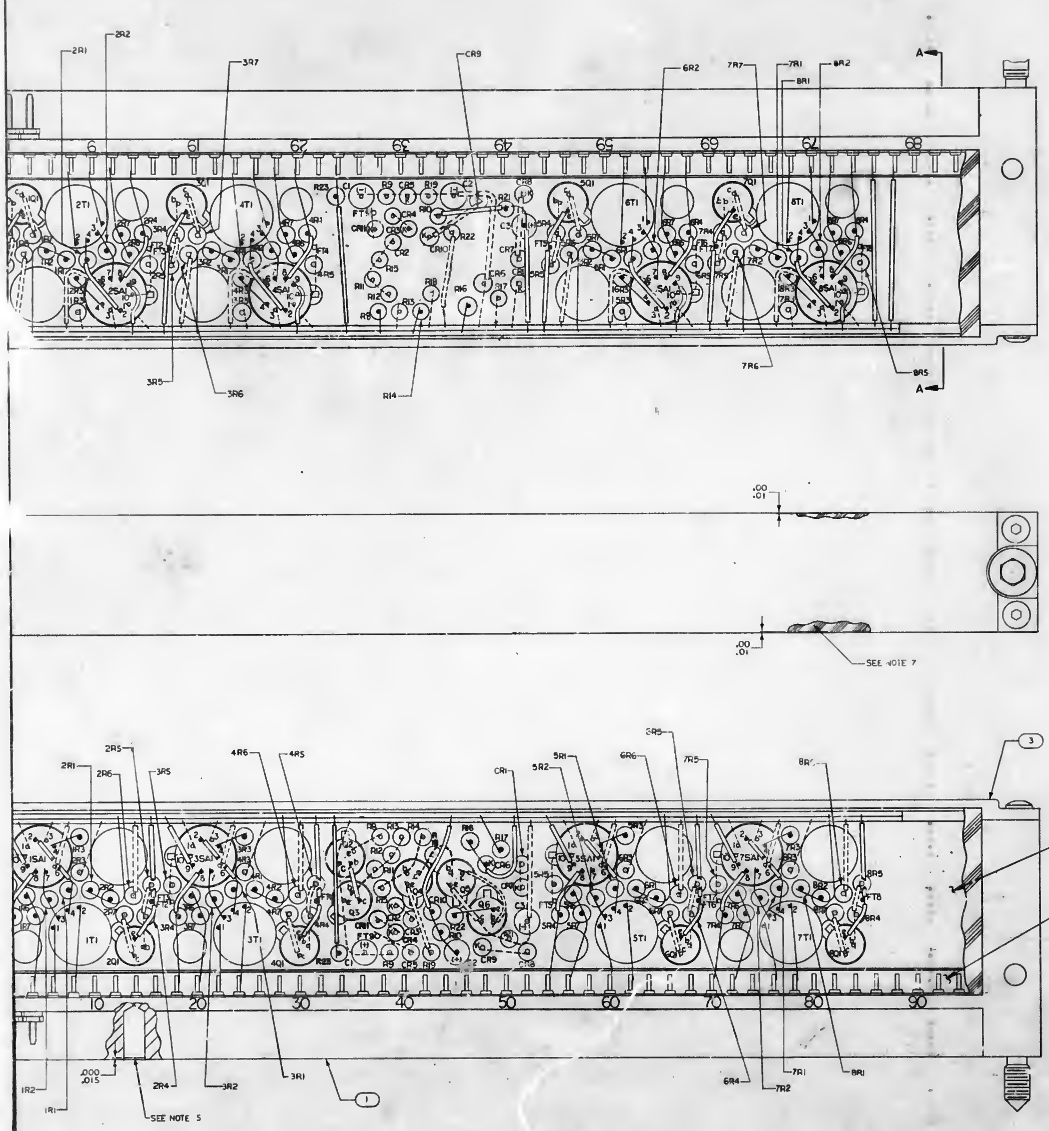
NOTES:

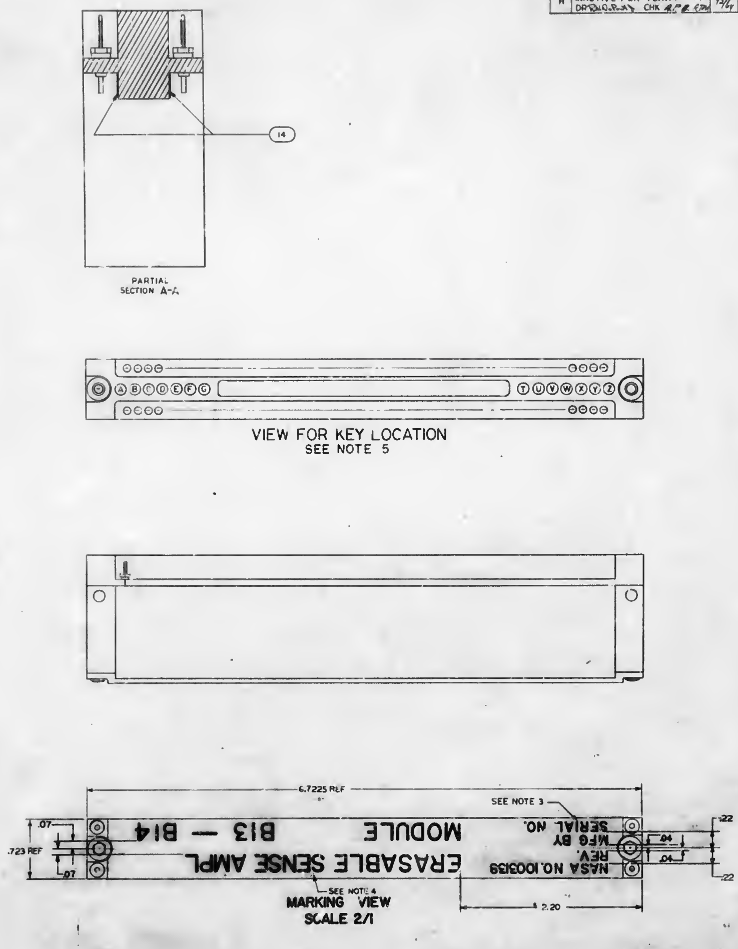
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. SERIALIZE AND MARK .093 HIGH PER ND1002023
4. MARK .250 HIGH WHITE PER ND 1002019
5. **FILL KEYING HOLES MARKED A, C, D, T, U, V USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183**
6. **APPLY FIND NO. 10 TO INTERFACE PRIOR TO ASSEMBLY**
7. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
8. BOND FIND NO.2 TO FIND NO.1 PER ND 1002004

1003138	H

1003138 H

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03961	9-26-63	[illegible]
B	REVISED PER TDRR 03849	10-10-63	[illegible]
C	REVISED PER TDRR 04165	[illegible]	[illegible]
D	REVISED PER TDRR 04358	[illegible]	[illegible]
E	REVISED PER TDRR 04751	[illegible]	[illegible]
F	REVISED PER TDRR 05633	[illegible]	[illegible]
G	REVISED PER TDRR 07066 DR [illegible] CHK [illegible]	[illegible]	[illegible]
H	INACTIVE PER TDRR 10889 DR [illegible] CHK [illegible]	7/2/64	[illegible]





MARKING VIEW
SCALE 2/1

INACTIVE AFTER SYSTEM NO.7
FOR NEW PROCUREMENT USE
1003463

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006826-12	INSULATION TAPE, ELECTRICAL	14
X	1006118	SCHEMATIC	13
2	1004546-3	WASHER, FLAT	12
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	11
AR	1006879	SILICONE COMPOUND THERMOCONDUCTIVE	10
~~6~~	~~1004117~~	~~PLUG, KEYING~~	~~9~~
~~3~~	~~1008145~~	~~PIN, SPRING~~	~~8~~
2	1004546-1	WASHER, FLAT	7
2	1004579-1	SCREW, JACKING	5
~~2~~	~~1004207~~	~~[illegible] CYLINDER~~	~~6~~
4	1000093-2	SCREW, BUTTON HEAD	4
1	1003108	COVER	3
1	1003140	ERASABLE SENSE AMPL. MODULE SUBASSY	2
1	1003148	HEADER HOUSING ASSY	1

LIST OF MATERIALS

1003184		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

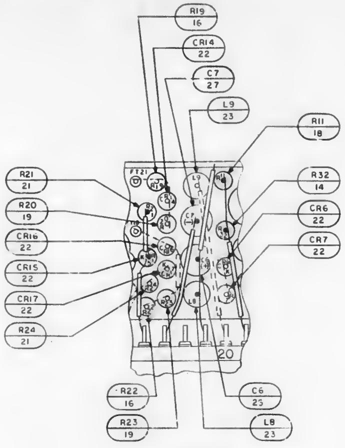
M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN BELL DATE 8/12/63
CHECKED [illegible] 10 Sept 63
APPROVAL [illegible] 10 Sept 63
APPROVAL [illegible]
NASA APPROVAL [illegible] 11-21-63
MIT APPROVAL [illegible] 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

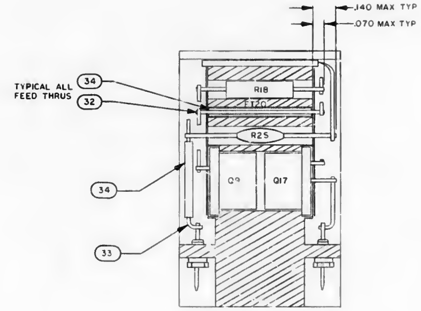
ERASABLE SENSE AMPL MODULE B13-B14 ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003138
SCALE 4/1
SHEET 1 OF 1

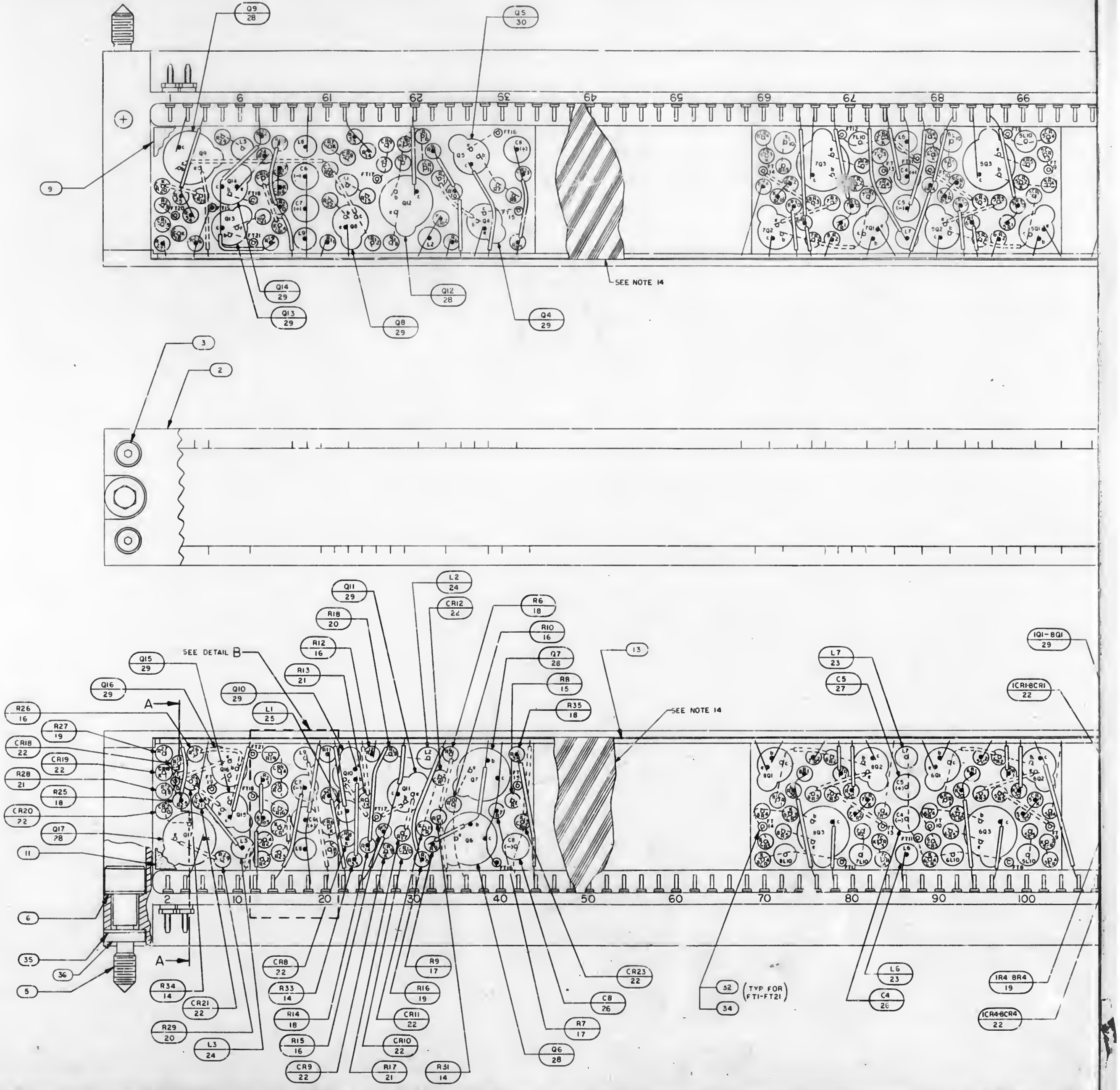
3138 H



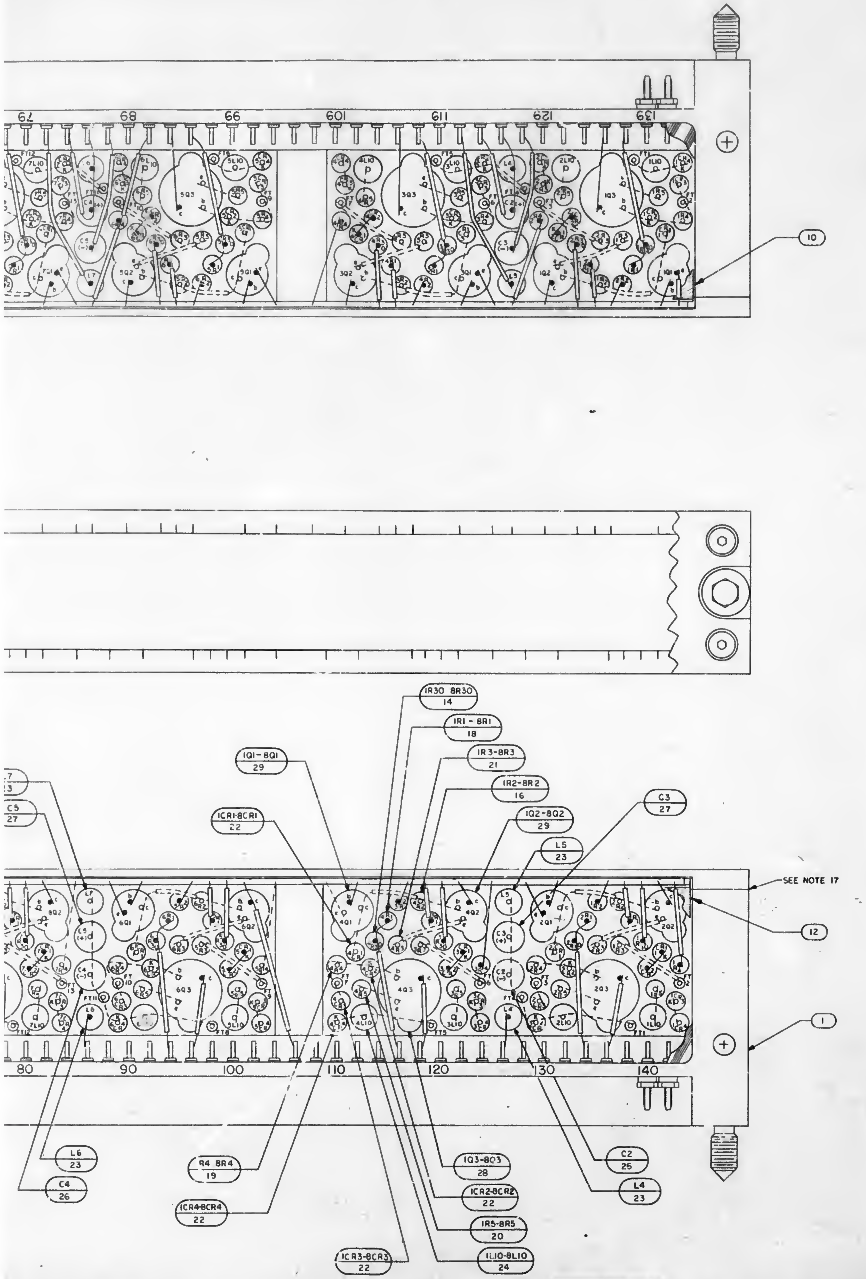
DETAIL B

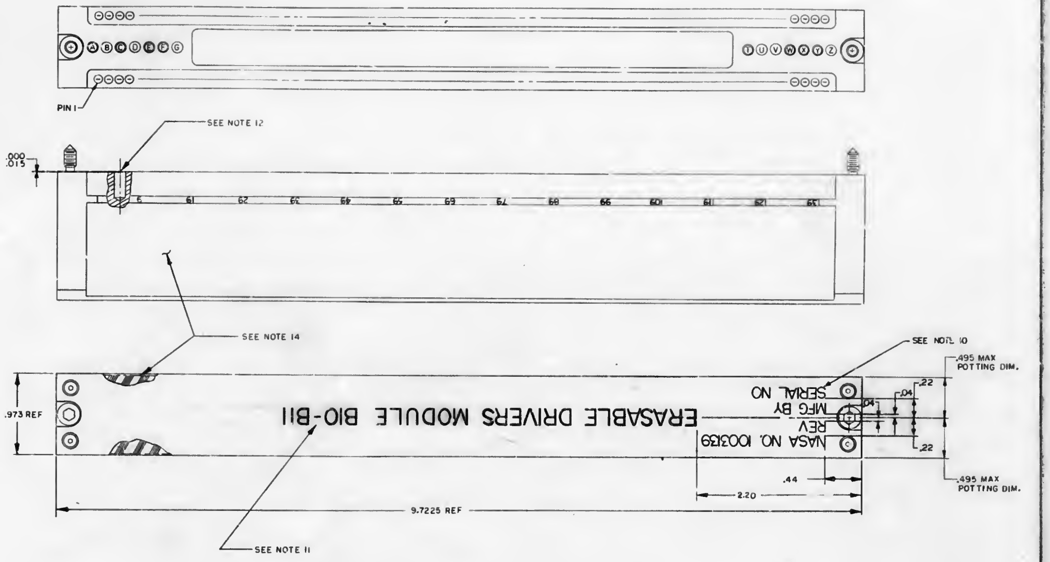


SECTION A-A



NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE FIND NO.14 THRU 30 PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 AND ND1002003
4. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. DASHED LINE INDICATES FIRST LEVEL WIRING AND SOLID LINES INDICATES SECOND LEVEL WIRING
7. K DENOTES CATHODE END OF DIODE
8. FT DENOTES FEED THRU
9. AR DENOTES AS REQUIRED
10. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
11. MARK .250 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2
12. FILL KEYING HOLES MARKED A,C,E,F,T,W,X,Y USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183
14. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY.
15. ASSEMBLE FIND NO.28 TO FIND NO.1 USING FIND NO.31 TO COMPLETELY FILL THE INTERFACES
16. VALUE TO BE DETERMINED BY ELECTRICAL TEST PER ATP ________ PART TO BE SELECTED FROM CHART A
17. APPLY FIND NO 31 TO INTERFACE PRIOR TO ASSEMBLY.



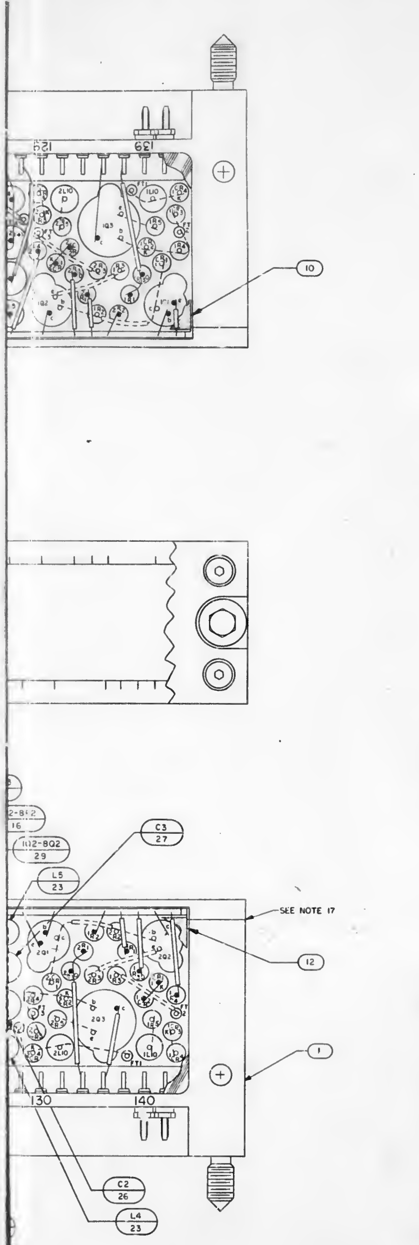


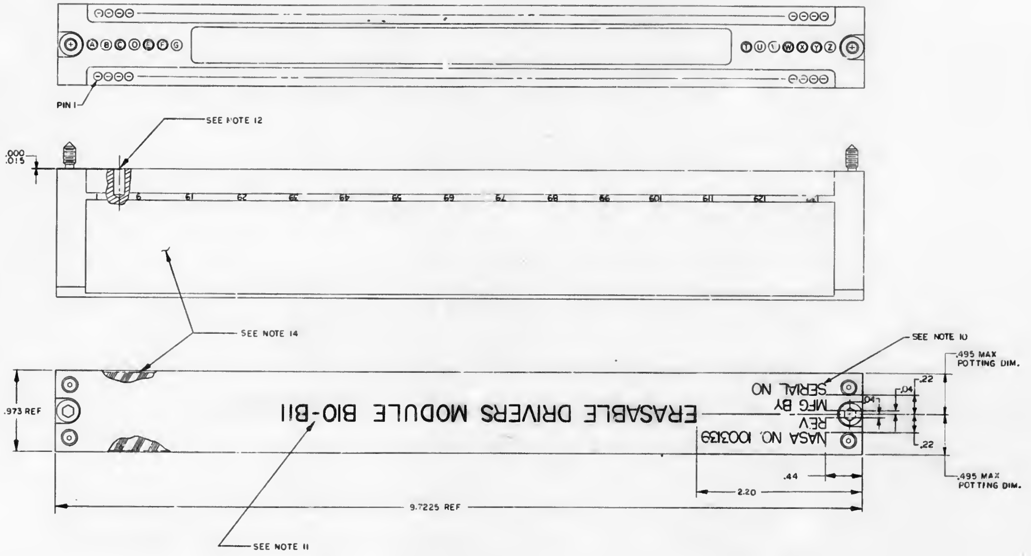
MARKING VIEW
SCALE 2/1

CHART A
R5, R18, R29
1006788-16
1006788-17
1006788-18
1006788-19
1006788-20
1006788-21
1006788-22
1006788-23
1006788-24
1006788-25
1006788-26
1006788-27
1006788-28
1006788-29
1006788-30
1006788-31
1006788-32
1006788-33
1006788-34
1006788-35

1003184
NEXT ASSY
APPLIC

REV	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03345	[illegible]	[illegible]
B	REVISED PER TDRR 04031	[illegible]	[illegible]
C	REVISED PER TDRR 04324	[illegible]	[illegible]
D	REVISED PER TDRR 04753	[illegible]	[illegible]
E	REVISED PER TDRR 05636	[illegible]	[illegible]
F	REVISED PER TDRR 05794	[illegible]	[illegible]
G	REVISED PER TDRR 11243 DR P. [illegible] CHK [illegible]	9/[illegible]/64	[illegible]
H	REVISED PER TDRR 12314 DR J.P. [illegible] CHK [illegible]	9/22/64	[illegible]
J	REVISED PER TDRR 13080 DR [illegible] CHK [illegible]	[illegible]	[illegible]





MARKING VIEW
SCALE 2/1

CHART A
R5, R18, R29
1006788-16
1006788-17
1006788-18
1006788-19
1006788-20
1006788-21
1006788-22
1006788-23
1006788-24
1006788-25
1006788-26
1006788-27
1006788-28
1006788-29
1006788-30
1006788-31
1006788-32
1006788-33
1006788-34
1006788-35

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
REF	1006086	SCHEMATIC	
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	36
2	1004546-3	WASHER, FLAT	35
AR	1006776-22	INSULATION, SLEEVING	34
AR	1006757-1	WIRE, ELECTRICAL	33
AR	1006787-2	WIRE, ELECTRICAL	32
AR	1006879	COMPOUND, THERMOCONDUCTIVE	31
1	1003520-2	TRANSISTOR POTTED	30
24	1003520-1	TRANSISTOR POTTED	29
13	1003089-1	TRANSISTOR POTTED	28
3	1006755-32	CAPACITOR	27
4	1006755-79	CAPACITOR	26
1	1010406-11	INDUCTOR	25
10	1010406-17	INDUCTOR	24
6	1010406-7	INDUCTOR	23
48	1006751	DIODE	22
13	1006788-8	RESISTOR	21
10	SEE NOTE 16	RESISTOR	20
12	1006750-49	RESISTOR	19
12	1006750-43	RESISTOR	18
2	1006750-39	RESISTOR	17
14	1006750-32	RESISTOR	16
1	1006750-28	RESISTOR	15
12	1006750-15	RESISTOR	14
1	1003161	MATRIX ASSY	13
1	1004247-4	INSULATOR	12
1	1004247-3	INSULATOR	11
1	1004247-2	INSULATOR	10
1	1004247-1	INSULATOR	9
~~8~~	~~1004117~~	~~PLUG, KEYING~~	~~8~~
~~2~~	~~1008[illegible]5~~	~~PIN, SPRING~~	~~7~~
2	1004546-1	WASHER, FLAT	6
2	1004579-1	SCREW, JACKING	5
~~2~~	~~1004207~~	~~DRIVE CYLINDER~~	~~4~~
4	1006273-11	SCREW, CAP, BUTTON HEAD	3
1	1003112	COVER	2
1	1003160	HEADER HOUSING ASSY	1

LIST OF MATERIALS

100..34	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.01 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
Cambridge, Mass
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible] 10/29/63
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 12/[illegible]/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

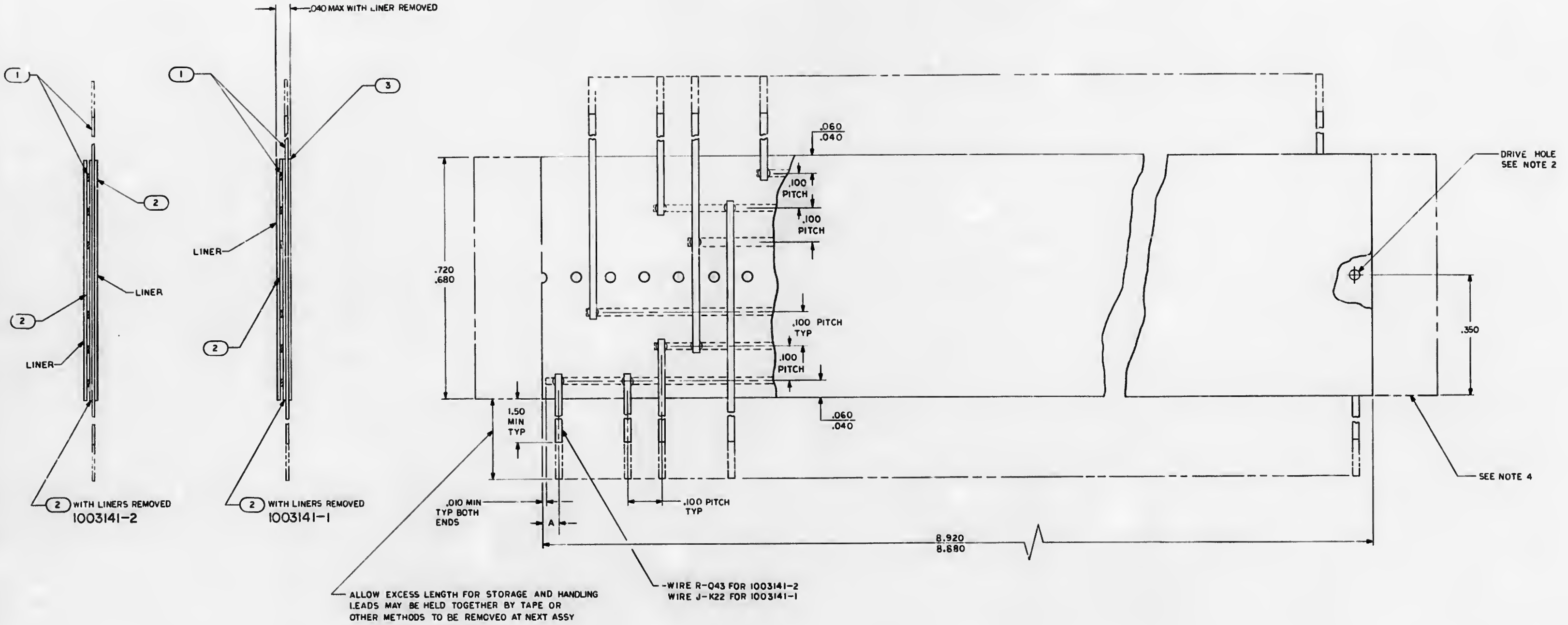
ERASABLE DRIVERS
B10 – B11 MODULE
ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003139
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 02694

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03630	10-3-63	WK
B	REVISED PER TDRR 03850	10-10-63	WK



NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY AND IS TO BE REMOVED AT NEXT ASSY

MATRIX ASSY	DIM A
1003141-1	.150
1003141-2	.250

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
—	AR	1006806-8	INSULATION TAPE,ELEC	3
AR	AR	1006806-5	INSULATION TAPE,ELEC	2
AR	AR	1006757-1	WIRE ELEC.010 X.020	1
-2	-1	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003152	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE
CHECKED
APPROVAL 20 NOV 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
CURRENT SWITCH MODU'.E B8

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003141
SCALE 8/1
WT
SHEET 1 OF 2

1003141 B

NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS T.S.R. 02674

SYM	DESCRIPTION	DATE	APPROVAL
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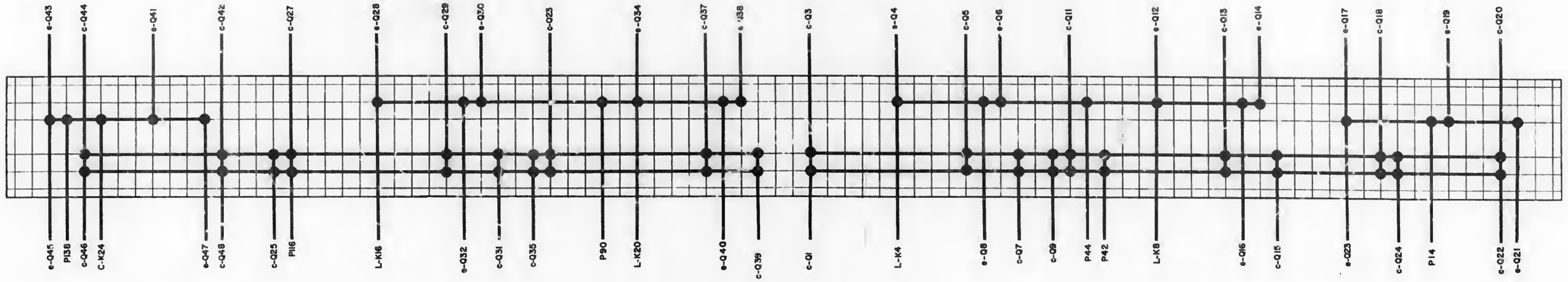
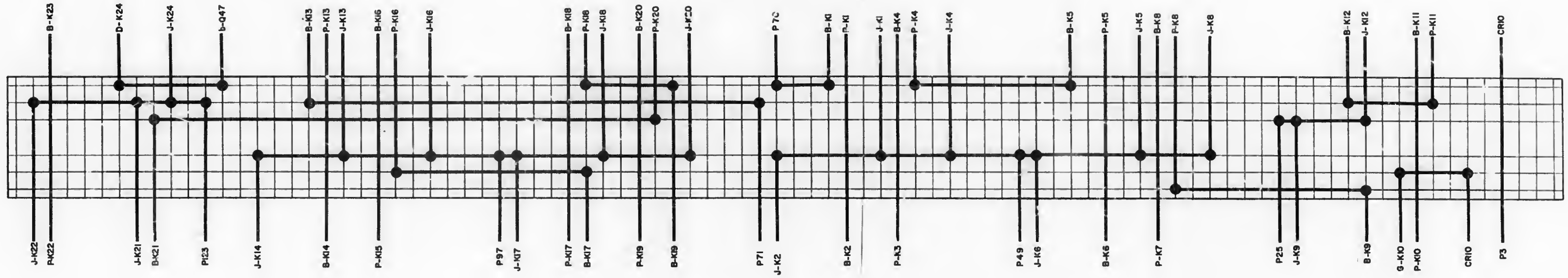
B	REVISED PER TDRR 23850		



WIRING DIAGRAM FOR 1003141-2



WIRING DIAGRAM FOR 1003141-1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1003152	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN DATE 14 AUG 63
CHECKED R.L. Kingsbury 19 Aug 63
APPROVAL 20 Aug 63
APPROVAL
NASA APPROVAL 8/21/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

MATRIX ASSY
CURRENT SWITCH MODULE B8

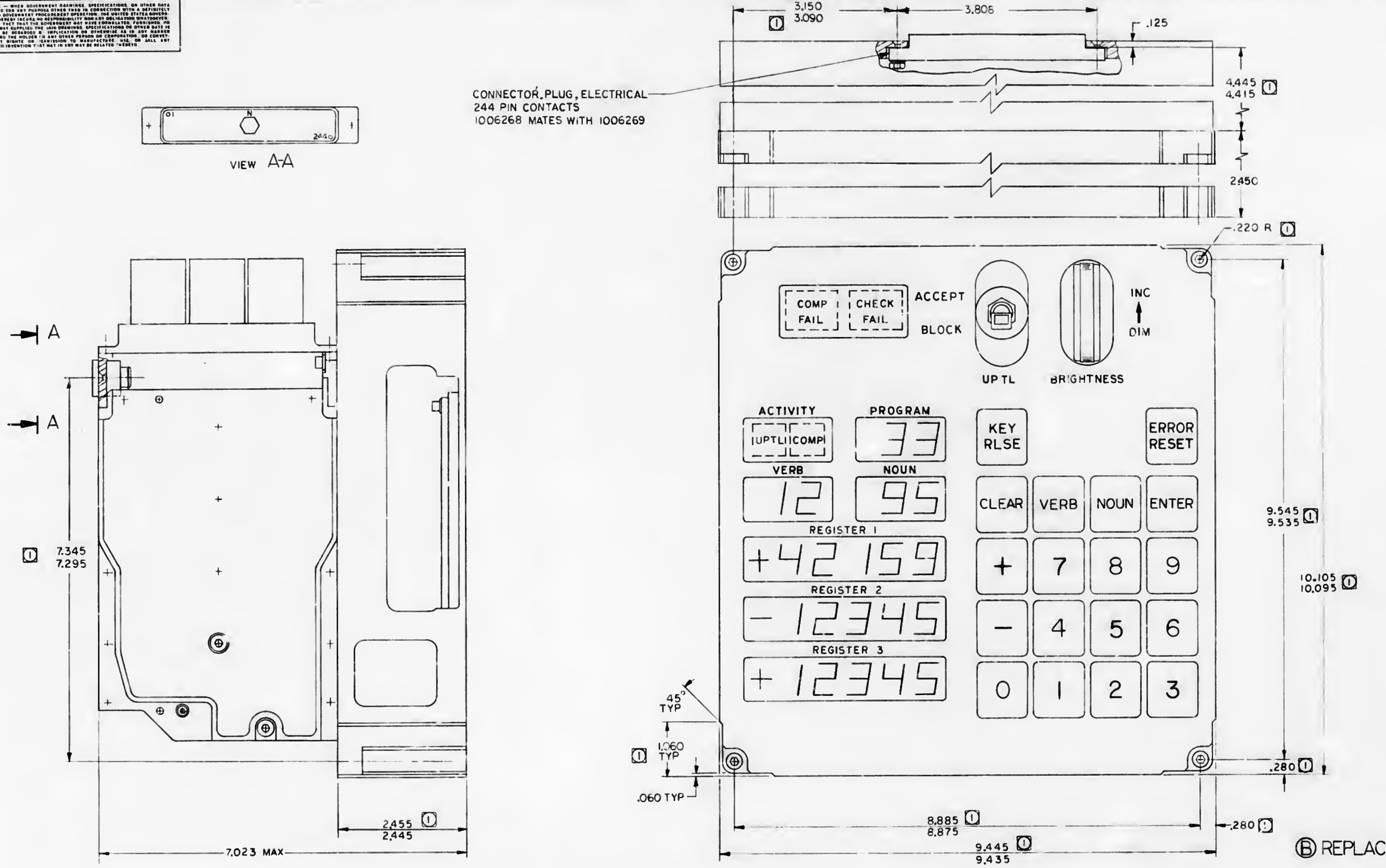
CODE IDENT NO —— SIZE E NASA DRAWING NO 1003141
SCALE 4/1 WT SHEET 2 OF 2

1003141

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACE BY REV A WITH CHANGES 04176 .	10-24-63	WH
C	REVISED PER TDRR 07260 DR Q.U.D. DuPont Jr CHK APPD	10/3/64 3/24/64	
D	REVISED PER TDRR 07644 DR CHK	4/30/64	



Ⓑ REPLACES REV A WITH CHANGES

ALL DIMENSIONS ARE FOR REFERENCE ONLY

NOTES

1. ⓵ DIMENSIONS SHOWN ARE CONTROLLED BY ICD MH01-01005-116
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

	1003400
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN P. Fanghill DATE 10-15-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

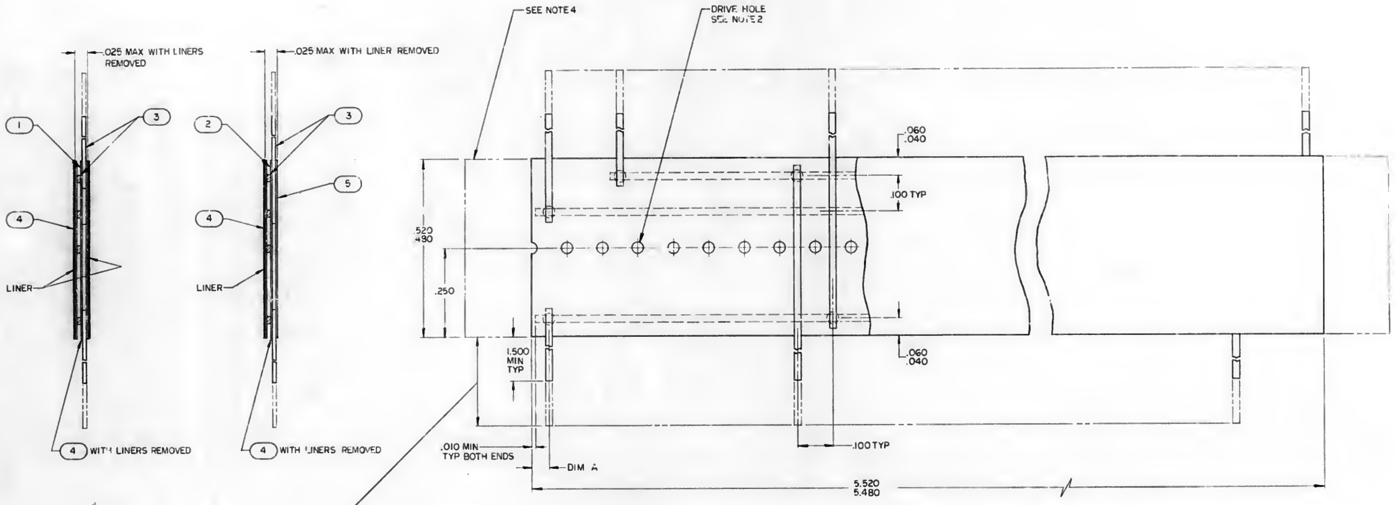
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC DSKY PANEL, OUTLINE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003142
SCALE 1/1
WT
SHEET OF 1

1003142

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS 03139		
A	REVISED PER TDRR 03V49	9-26-63	



ALLOW EXCESS LENGTH FOR STORAGE & HANDLING LEADS MAY HELD TOGETHER BY TAPE OR OTHER METHODS TO BE REMOVED AT NEXT ASSY SEE NOTE 4

PART NO.	DIM. A
1003143-1	.150
1003143-2	.050

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY & IS TO BE REMOVED AT NEXT ASSY

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006806-7	INSULATION TAPE, ELEC	5
R	1006806-4	INSULATION TAPE, ELEC	4
AR	1006757-7	WIRE, ELEC .005 x .020	3
1	1003143-2	MATRIX ASSY	2
1	1003143-1	MATRIX ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003147	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —#— DECIMALS ±.005 ANGLES ± —#—
DO NOT SCALE THIS DRAWING
MATERIAL —#—
HEAT TREATMENT —#—
FINAL FINISH —#—

MIT INSTRUMENTATION LAB CAMBRIDGE MASS
DRAWN C.A. Dietz DATE 8-22-63
CHECKED 11 Sep 63
APPROVAL 12 Sep 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

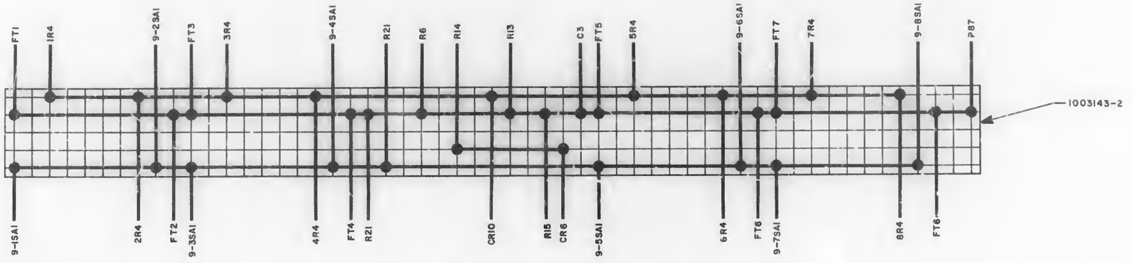
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

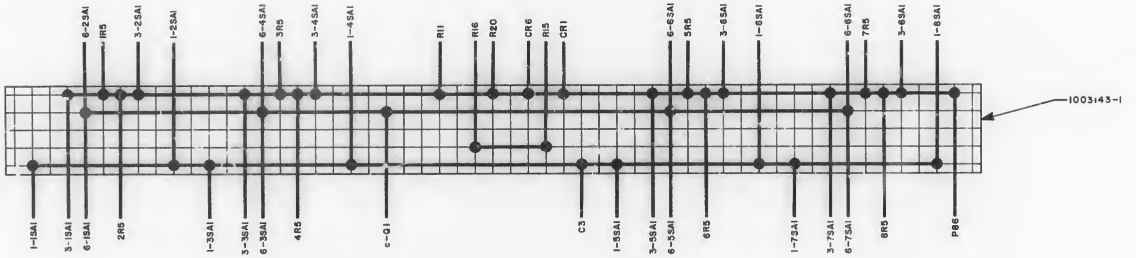
MATRIX ASSY
ROPE SENSE AMPLIFIER
B26-B27 MODULE

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1003143
SCALE 8/1
WT
SHEET 1 OF 2

1003143 A

REVISIONS 03134			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRP 13✓47	9-26-63	





QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN C.A. Barton DATE
CHECKED
APPROVAL 12 SEP 63
APPROVAL
NASA APPROVAL 9/12/63
MIT APPROVAL W. Kupfer 12 Sep 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSEMBLY
ROPE SENSE AMPLIFIER
B26-27 MODULE

CODE IDENT NO
SIZE E
NASA DRAWING NO 1003143
SCALE 4/1
WT
SHEET 2 OF 2

1003143 A

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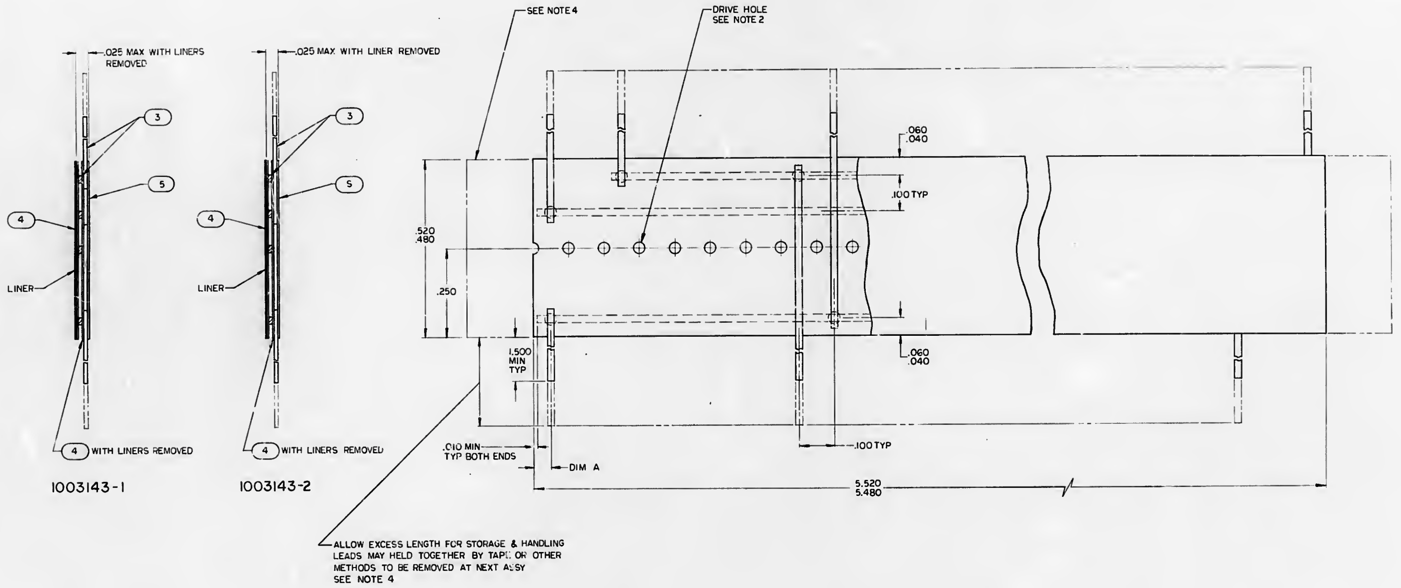
REVISIONS 03139

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03447	9-26-63	[illegible]
B	REVISED PER TDRR 03837	[illegible]	WK



PART NO.	DIM. A
1003143-1	.150
1003143-2	.050

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY & IS TO BE REMOVED AT NEXT ASSY

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006806-7	INSULATION TAPE, ELEC	5
AR	1006806-4	INSULATION TAPE, ELEC	4
AR	1006757-7	WIRE, ELEC .005 x .020	3
1	1003143-2	MATRIX ASSY	2
1	1003143-1	MATRIX ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003147	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN [illegible] DATE 8-22-63
CHECKED [illegible] 11 Sep 63
APPROVAL [illegible] 12 SEP 63
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

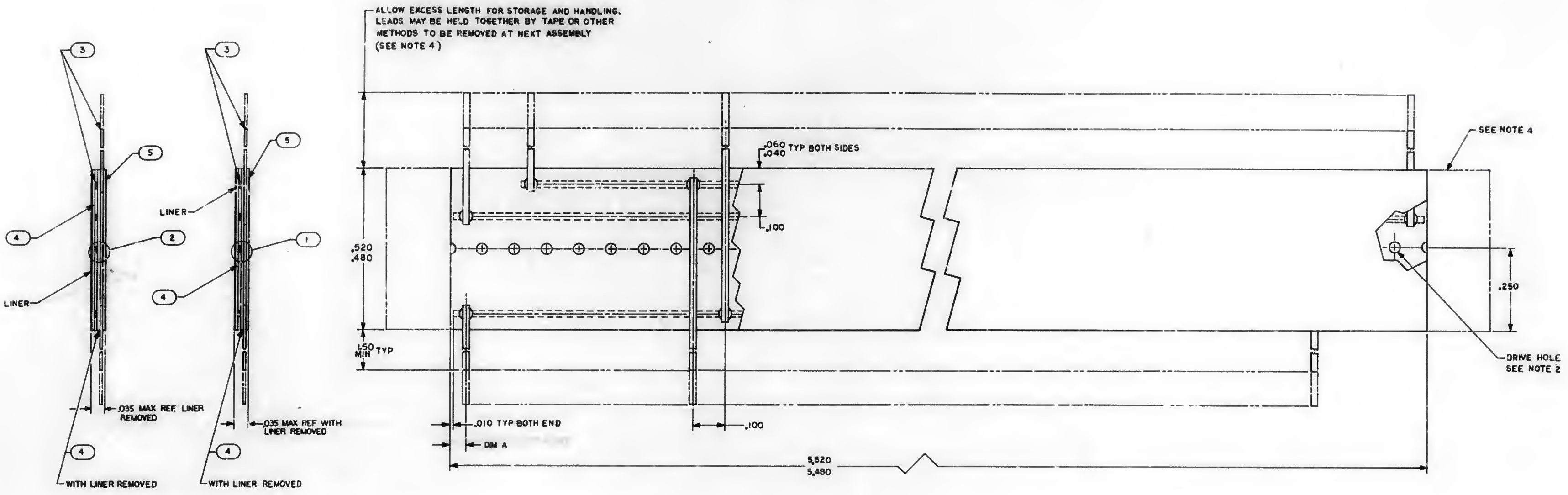
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
ROPE SENSE AMPLIFIER
B26-B27 MODULE

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1003143
SCALE 8/1
WT
SHEET 1 OF 2

NOTICE — [illegible]

SYM	REVISIONS 03137 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TORR 03450	9-26-63	
B	REVISED PER TORR 03788	10-10-63	
C	REVISED PER TORR 04019	10-16-63	


3
5
LINER
4
2
LINER
.035 MAX REF. LINER REMOVED
4
WITH LINER REMOVED
3
5
LINER
1
4
.035 MAX REF WITH LINER REMOVED
4
WITH LINER REMOVED
ALLOW EXCESS LENGTH FOR STORAGE AND HANDLING. LEADS MAY BE HELD TOGETHER BY TAPE OR OTHER METHODS TO BE REMOVED AT NEXT ASSEMBLY (SEE NOTE 4)
.060
.040 TYP BOTH SIDES
.100
.520
.480
1.50 MIN TYP
.010 TYP BOTH END
DIM A
.100
5.520
5.480
SEE NOTE 4
.250
DRIVE HOLE SEE NOTE 2

PART NO.	DIM.A ±.010
1003144-1	.050
1003144-2	.150

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND 1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY AND IS TO BE REMOVED AT NEXT ASSY

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006806 — 7	INSULATION TAPE, ELECTRICAL	5
AR	1006806 —13	INSULATION TAPE, ELECTRICAL	4
AR	1006767 — 1	WIRE, ELECTRICAL .010X.020	3
1	1003144 — 2	MATRIX ASSY	2
1	1003144 — 1	MATRIX ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003140	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

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INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE AUG 22 63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 9/12/63
MIT APPROVAL Sep 12 1963

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
ERASABLE SENSE AMPL MODULE

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1003144
SCALE 8/1
WT
SHEET 1 OF 2

1003144 C

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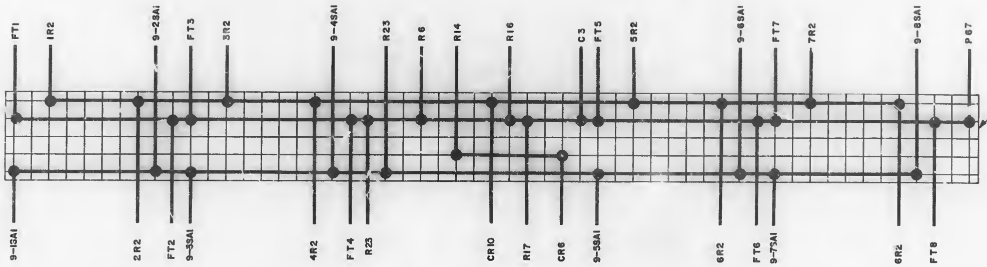
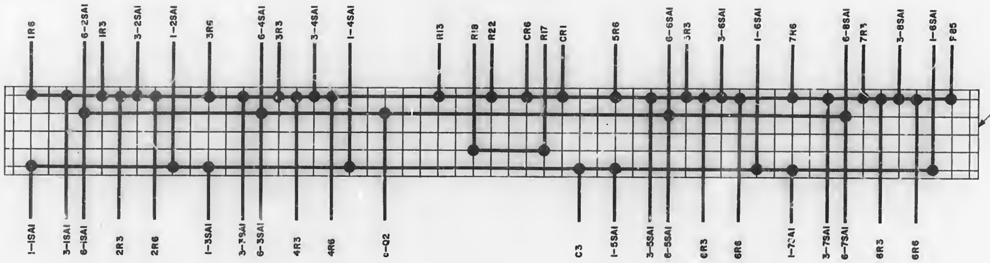
REVISIONS 03134

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03450	9-26-63	[illegible]
B	REVISED PER TDRR 03640	10-10-63	[illegible]
C	REVISED PER TDRR 04919	12-10-63	[illegible]



1003144-1



1003144-2

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003140	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES

DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DWG NO CONTRACT

DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL W B [illegible] SEP 63
APPROVAL [illegible]

NASA APPROVAL [illegible] 9 [illegible] 63

MIT APPROVAL W Kupfer 12 Sep 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

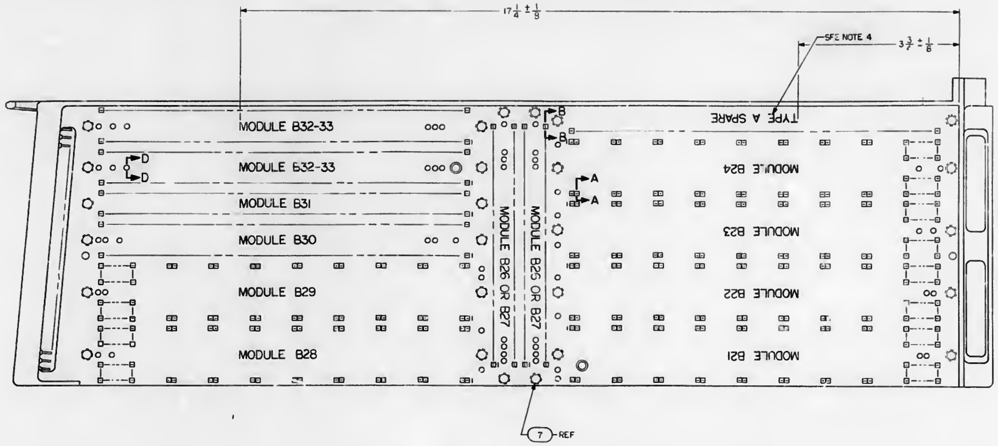
MATRIX ASSY
ERASABLE SENSE AMPL MODULE

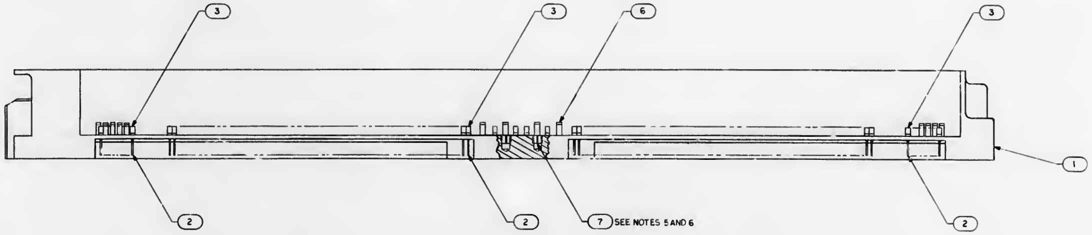
CODE IDENT NO	SIZE	NASA DRAWING NO
	E	1003144

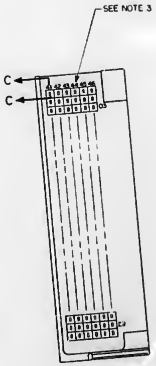
SCALE 4/1 WT SHEET 2 OF 2

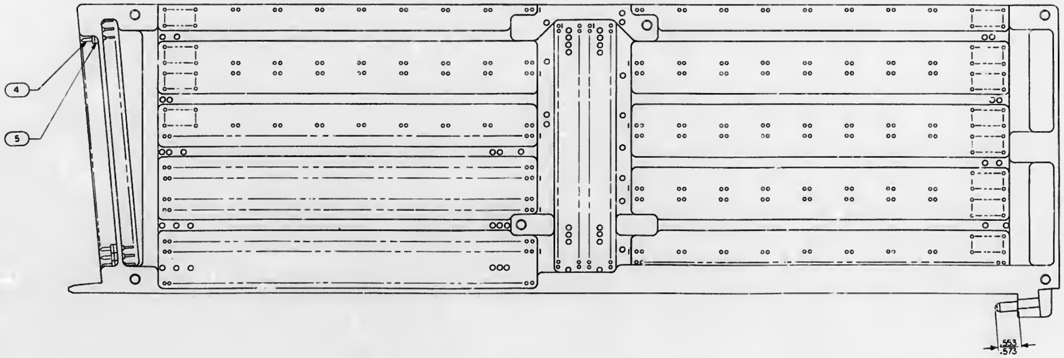
1003144 C

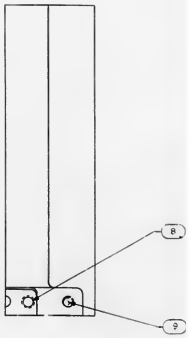
[illegible]









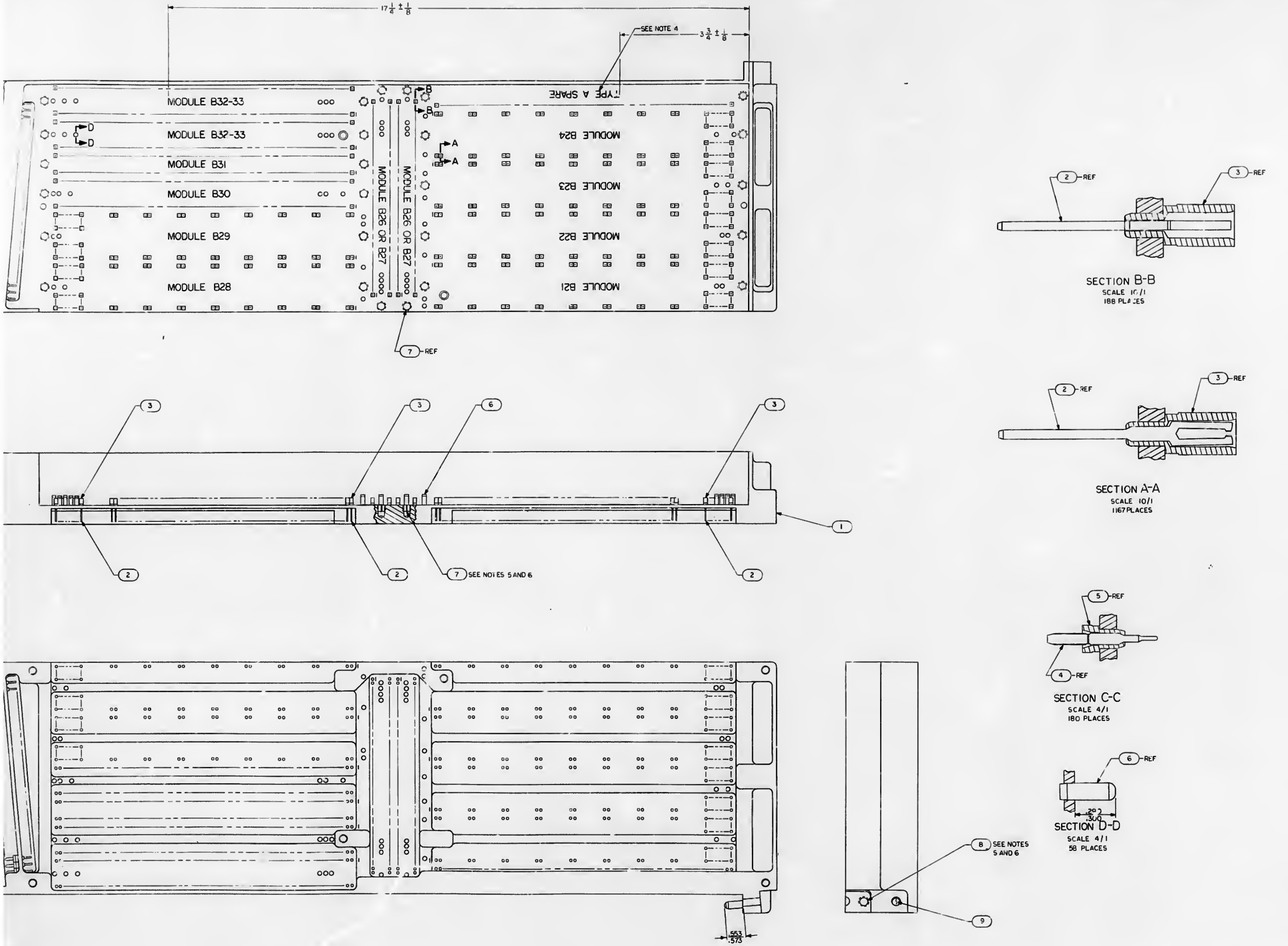


NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. INSTALL FIND NO'S. 2, 3, 4 AND 5 PER ND1002136
3. MARK .100/.060 HIGH WHITE PER ND1002019
4. MARK .177/.197 HIGH WHITE PER ND1002019
5. COAT THREAD OF FIND NO'S 1, 7 AND 8 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. INSTALL FIND NO'S 7 AND 8 PER ND1002121

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05048	12-10-63	

1003145 A



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1010620-3	PIN GUIDE	9
1	NAS1394[illegible]-08L	INSERT THREADED	8
26	1006702-5	INSERT, THREADED, SELF-LOCKING	7
58	1004248	PIN, KEYING	6
180	1010383-1	INSULATOR, WRAPOST, MALE	5
180	1006996-6	CONTACT, BLADE EDGE CONN	4
1167	1006774	INSULATOR, WRAPOST, FEMALE MIN	3
1167	1006781-2	CONTACT, WRAPOST, FEMALE MIN	2
1	1003127-1	TRAY B, MATCHED MACHINED	1

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

NEXT ASSY | USED ON
APPLICATION

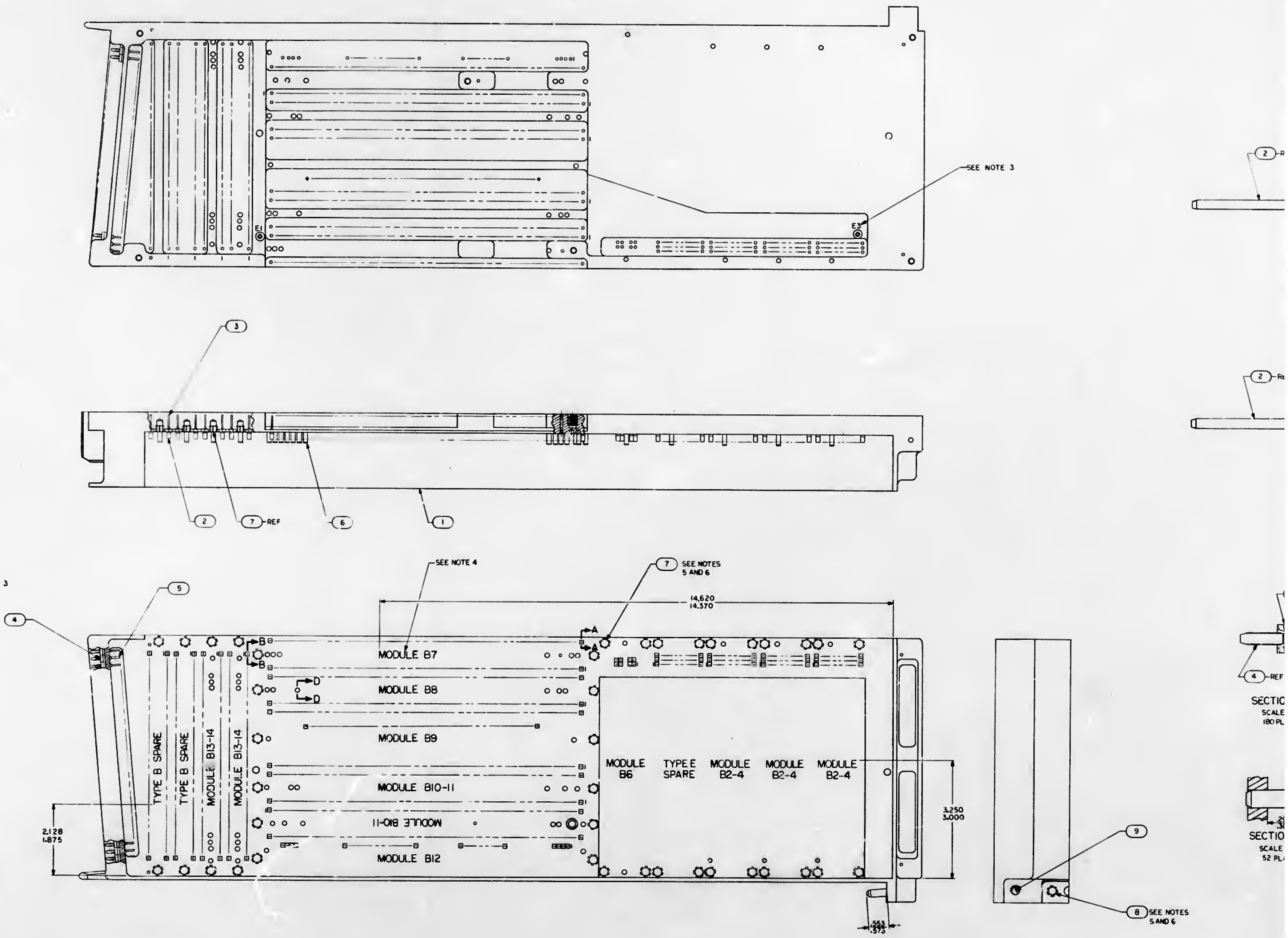
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN DATE 26AUG63
CHECKED
APPROVAL
APPROVAL 10-30-63
NASA APPROVAL
MIT APPROVAL 30 Oct 63

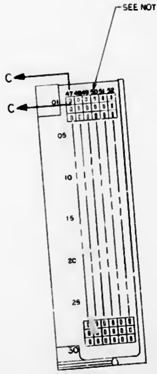
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY B SUBASSEMBLY
RIGHT HAND

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003145
SCALE 1/1
WT
SHEET 1 OF 1

1003145 A



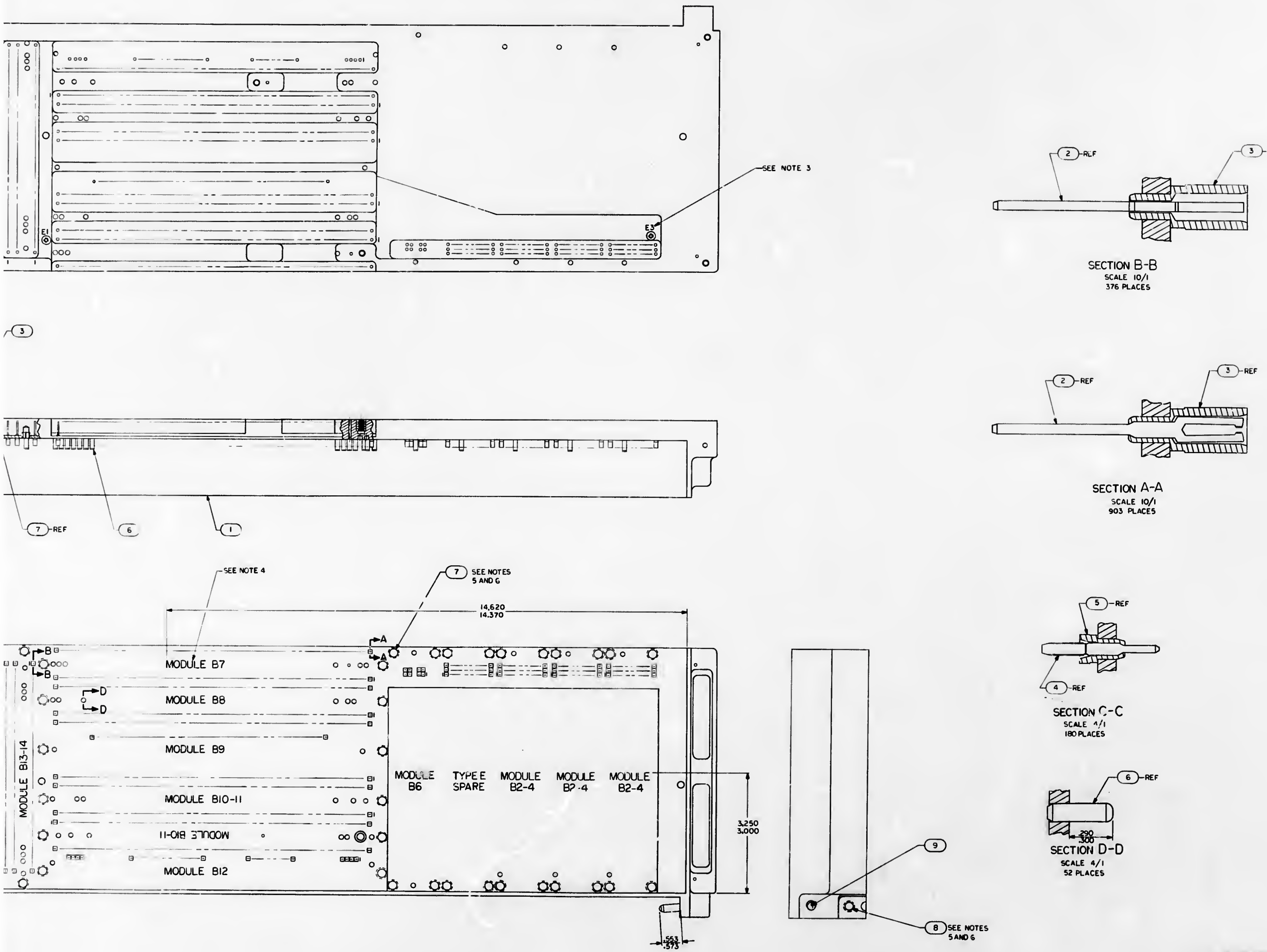


NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. INSTALL FIND NO'S. 2 3, 4, AND 5 PER ND1002136
3. MARK .100/.060 HIGH WHITE PER ND1002019 AND ND1002122 TYPE 2, CLASS 1
4. MARK .167/.207 HIGH WHITE PER ND1002019 AND ND1002122 TYPE 2, CLASS 1
5. COAT THREAD OF FIND NO'S 1, 7 AND 8 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. INSTALL FIND NO'S 7 AND 8 PER 1002121

1003146 B

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER 1DRR 05049	12-10-63	
B	REVISED PER TDRR 07344 DR Wheeler CHK	3/30/64	HCL



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1010620-3	PIN GUIDE	9
1	NASA1394CA-08L	INSERT, THREADED	8
40	1006702-5	INSERT, THREADED, SELF-LOCKING	7
52	1004248	PIN, KEYING	6
180	1010383-1	INSULATOR, WRAPOST, MALE	5
180	1006996-6	CONTACT, BLADE EDGE CONN	4
1279	1006774	INSULATOR, WRAPOST, FEMALE, MIN	3
1279	1006781-2	CONTACT, WRAPOST, FEMALE, MIN	2
1	1003127-2	TRAY B, MATCHED MACHINED LEFT	1

LIST OF MATERIALS

1003176	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

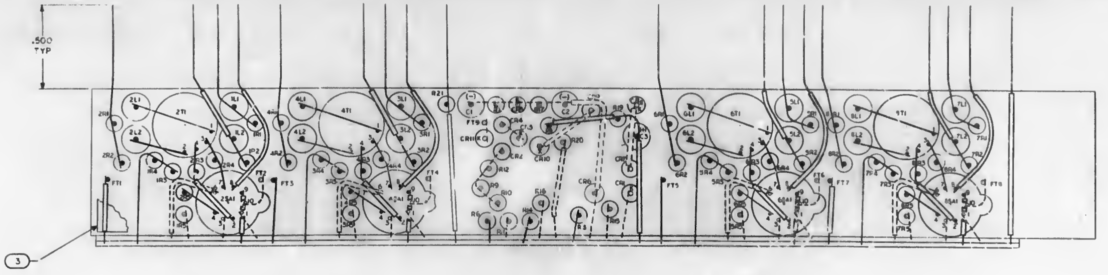
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

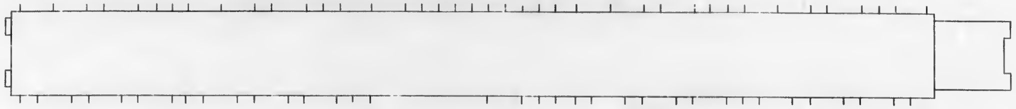
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

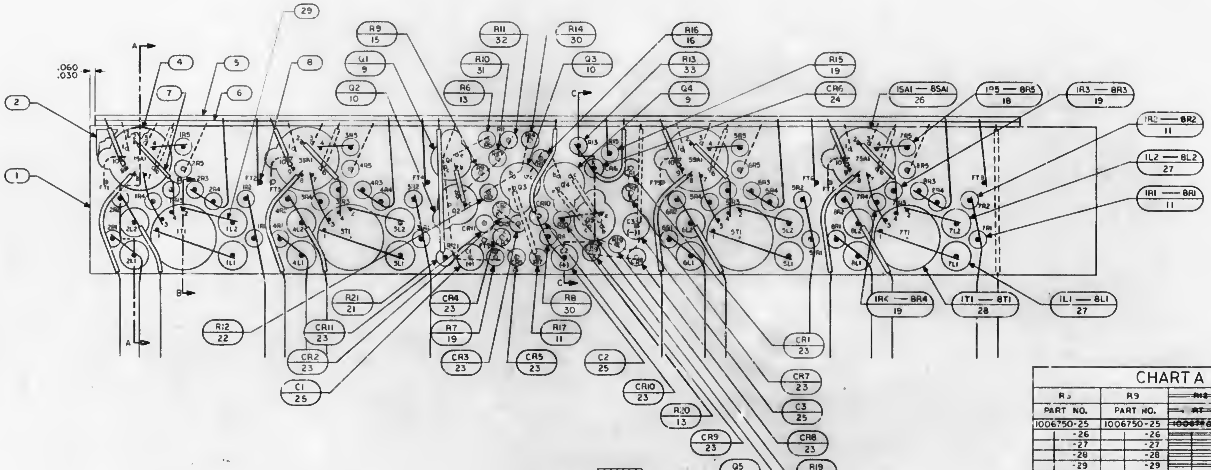
TRAY B SUBASSEMBLY
LEFT HAND

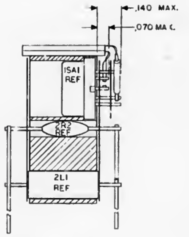
CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003146
SCALE 1/1
WT
SHEET 1 OF 1

1003146 B

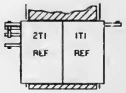




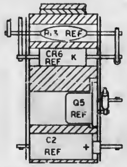




SECTION A-A



SECTION B-B



SECTION C-C

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE FIND NO. 9 THRU 28 PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. DASHED LINES INDICATES FIRST LEVEL WIRING AND SOLID LINES INDICATES SECOND LEVEL WIRING
7. K DENOTES CATHODE SIDE OF DIODE
8. FT DENOTES FEED THRU
9. AR DENOTES AS REQUIRED
10. VALUES FOR R5, R9, ~~R12~~, R16 TO BE DETERMINED AT ELECTRICAL TEST

PART TO BE SELECTED FROM CHART A

CHART A

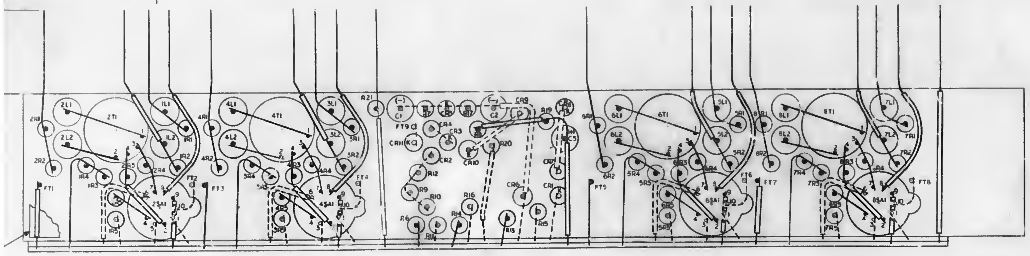
R5	R9	~~R12~~	R16
PART NO.	PART NO.	~~PART NO.~~	PART NO.
1006750-25	1006750-25	~~1006750-1~~	1006750-32
-26	-26	~~-2~~	-33
-27	-27	~~-3~~	-34
-28	-28	~~-4~~	-35
-29	-29	~~-5~~	-36
-30	-30	~~-6~~	-37
-31	-31	~~-7~~	-38
-32	-32	~~-8~~	-39
-33	-33	~~-9~~	-40
-3	-34	~~-10~~	-41
-35	-35	~~-11~~	-42
-36	-36	~~-12~~	-43
-37	-37	~~-13~~	-44
-38	38	~~-14~~	-45
-39	-39	~~-15~~	-46
-40	-40	~~-16~~	-47
-41	-41	~~-17~~	-48
-42	-42	~~-18~~	-49
-43	-43	~~-19~~	-25
-44	-44	~~-20~~	-26
-45	-45	~~-21~~	27
-46	-46	~~-22~~	-28
-47	-47	~~-23~~	-29
-48	-48	~~-24~~	-30
1006750-49	-49	~~1006750-25~~	1006750-31
	-50		
	-51		
	-52		
	-53		
	-54		
	-55		
	1006750-56		

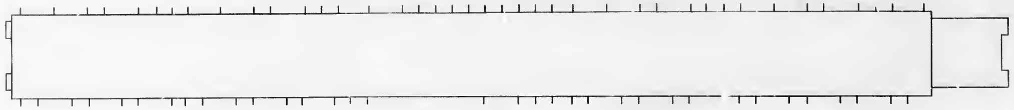
CHART A (CONT)

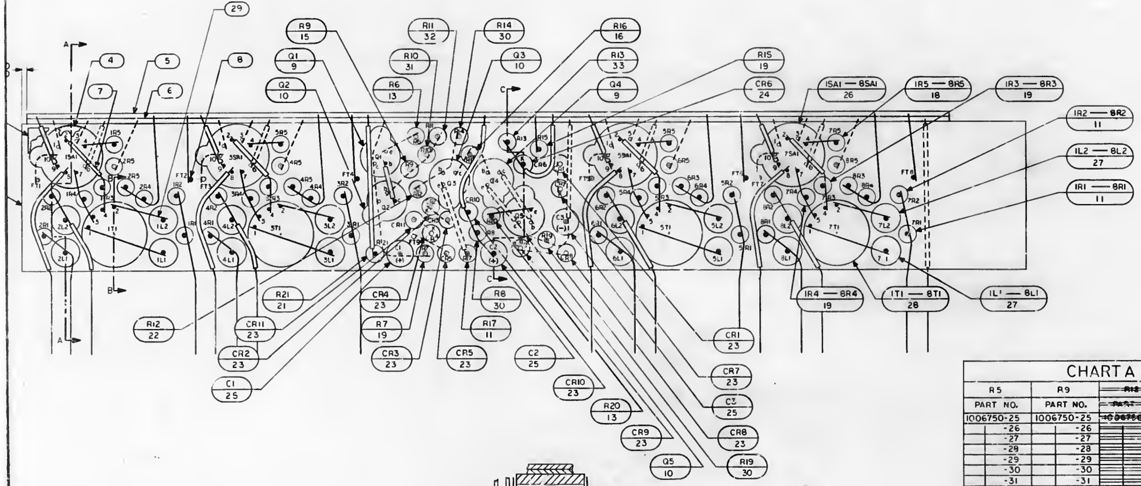
R5	R9
PART NO.	PART NO
1006750 -15	1006750 -15
-16	-16
-17	-17
-18	-18
-19	-19
-20	-20
-21	-21
-22	-22
-23	-23
1006750 -24	1006750 -24

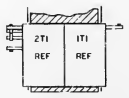
1003147 F

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03460		
B	REVISED PER TDRR 24027	1-9-63	
C	REVISED PER TORR 06813		
D	REVISED PER TDRR 26434		
E	REVISED PER TDRR 11325 DR J.P. Sward CHK C.M.H. RTM	9/20/64	
F	REVISED PER TDRR 13436 DR P. Zubrod CHK C.M.H. RTM	11/12/64	

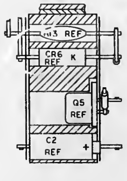








SECTION B-B



SECTION C-C

CHART A			
R5	R9	~~R12~~	R16
PART NO.	PART NO.	~~PART NO.~~	PART NO.
1006750-25	1006750-25	~~1006750-1~~	1006750-32
-26	-26	~~-2~~	-33
-27	-27	~~-3~~	-34
-28	-28	~~-4~~	-35
-29	-29	~~-5~~	-36
-30	-30	~~-6~~	-37
-31	-31	~~-7~~	-38
-32	-32	~~-8~~	-39
-33	-33	~~-9~~	-40
-34	-34	~~-10~~	-41
-35	-35	~~-11~~	-42
-36	-36	~~-12~~	-43
-37	-37	~~-13~~	-44
-38	-38	~~-14~~	-45
-39	-39	~~-15~~	-46
-40	-40	~~-16~~	-47
-41	-41	~~-17~~	-48
-42	-42	~~-18~~	-49
-43	-43	~~-19~~	-25
-44	-44	~~-20~~	-26
-45	-45	~~-21~~	-27
-46	-46	~~-22~~	-28
-47	-47	~~-23~~	-29
-48	-48	~~-24~~	-30
1006750-49	-49	~~1006750-25~~	1006750-31
	-50		
	-51		
	-52		
	-53		
	-54		
	-55		
	1006750-56		

CHART A (CONT)	
R5	R9
PART NO.	PART NO
1006750 -15	1006750 -15
-16	-16
-17	-17
-18	-18
-19	-19
-20	-20
-21	-21
-22	-22
-23	-23
1006750 -24	1006750 -24

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
REF	1006119	SCHEMATIC	
1	1006750-35	RESISTOR	33
1	1006750-43	RESISTOR	32
1	1006750-56	RESISTOR	31
3	1006750-39	RESISTOR	30
AR	1006757-1	WIRE, ELECTRICAL .010 X .020	29
6	1006762-2	TRANSFORMER	28
16	1010406-13	COIL	27
8	1006769	SENSE AMPLIFIER	26
3	1006755-69	CAPACITOR	25
1	1006838	DIODE	24
10	1006751	DIODE	23
1	1006750-24	RESISTOR	22
1	1006750-49	RESISTOR	21
~~1~~	~~1006750-14~~	~~RESISTOR~~	~~20~~
18	1006750-24	RESISTOR	19
8	SEE NOTE 10	RESISTOR	18
~~1~~	~~1006750-20~~	~~RESISTOR~~	~~17~~
1	SEE NOTE 10	RESISTOR	16
1	SEE NOTE 10	RESISTOR	15
~~4~~	~~1006750-23~~	~~RESISTOR~~	~~14~~
2	1006750-15	RESISTOR	13
~~1~~	~~1006750-23~~	~~RESISTOR~~	~~12~~
17	1006750-32	RESISTOR	11
3	1006752	TRANSISTOR	10
2	1006753	TRANSISTOR	9
AR	1006757-8	WIRE, ELECTRICAL	8
AR	1006776-22	INSULATION, SLEEVING	7
1	1003143-1	MATRIX ASSY	6
1	1003143-2	MATRIX ASSY	5
8	1004242	INSULATOR	4
1	1004224-2	INSULATOR	3
1	1004224-1	INSULATOR	2
1	1004223	HOLDER, COMPONENT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003154	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ROPE SENSE AMPLIFIER B26-B27 MODULE SUBASSEMBLY

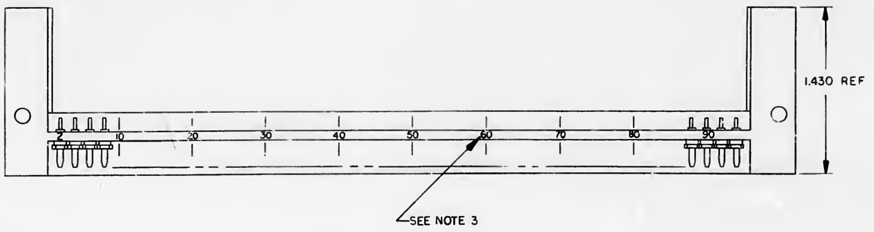
CODE IDENT NO. SIZE J NASA DRAWING NO. 1003147
SCALE 4/1 WT SHEET 1 OF 1

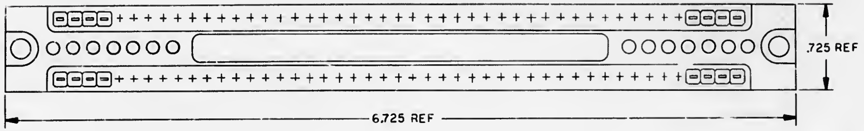
1003147 F

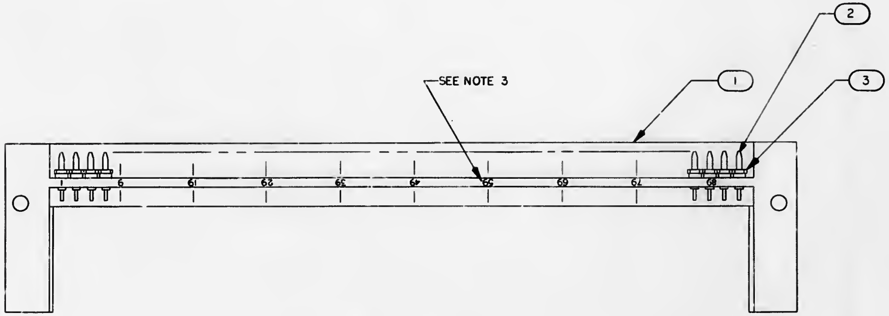
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS C2545

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02844	8-20-64	RPF
B	REVISED PER TDRR 04516	11-6-64	WK
C	REVISED PER TDRR 08411 DR B Jensen CHK A.R.B. REP	5/7/64	







NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO. 2&3 PER ND1002136
3. MARK .060/.080 HIGH WHITE PER ND1002019, AND ND1002122, TYPE II, CLASS I

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
94	1006775	INSULATOR, WRAPOST, MALE MIN	3
94	1006782-1	CONTACT, WRAPOST, MALE MIN	2
1	1003109	HEADER HOUSING	1

NEXT ASSY	USED ON
1003154	
1003138	

APPLICATION

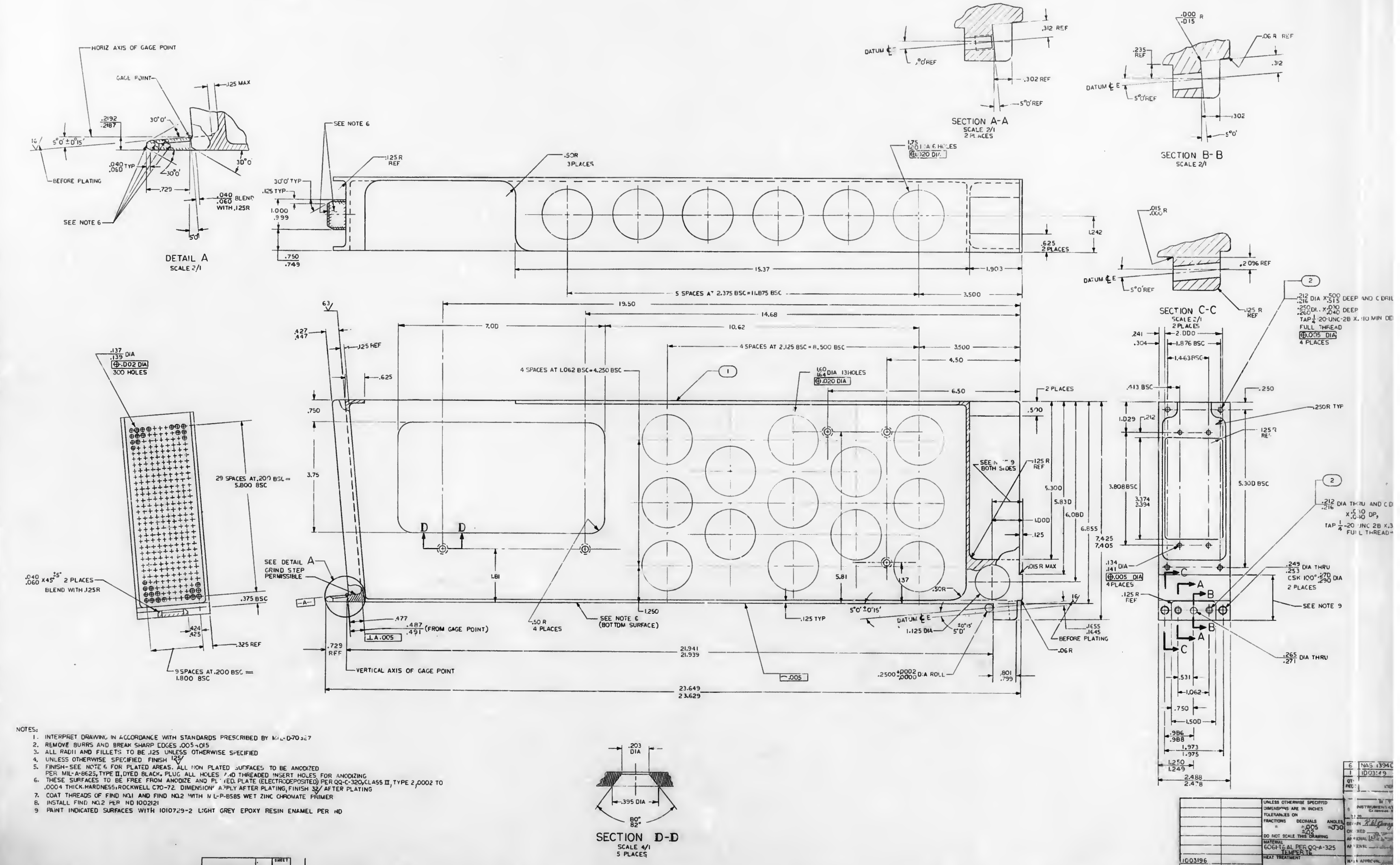
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN DATE 9/6/63
CHECKED 12 Nov 63
APPROVAL 13 Nov 63
APPROVAL
NASA APPROVAL
MIT APPROVAL W Kupfer 14 Nov 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER HOUSING ASSY
SENSE AMPLIFIER MODULE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003148
SCALE 2/1
WT
SHEET 1 OF 1


DETAIL A
SCALE 2/1
HORIZ AXIS OF GAGE POINT
GAGE POINT
BEFORE PLATING
SEE NOTE 6
SECTION A-A
SCALE 2/1
2 PLACES
SECTION B-B
SCALE 2/1
SECTION C-C
SCALE 2/1
2 PLACES
SECTION D-D
SCALE 4/1
5 PLACES
DATUM ℄ E
5 SPACES AT 2.375 BSC=11.875 BSC
4 SPACES AT 2.125 BSC = 8.500 BSC
4 SPACES AT 1.062 BSC=4.250 BSC
29 SPACES AT .200 BSC = 5.800 BSC
9 SPACES AT .200 BSC = 1.800 BSC
.137 .139 DIA ⊕.002 DIA 300 HOLES
1.60 1.64 DIA 13 HOLES ⊕.020 DIA
1.75 1.80 DIA 6 HOLES ⊕.020 DIA
SEE DETAIL A GRIND STEP PERMISSIBLE
VERTICAL AXIS OF GAGE POINT
.487 .491 (FROM GAGE POINT)
SEE NOTE 6 (BOTTOM SURFACE)
SEE NOTE 9
SEE NOTE 9 BOTH SIDES
.2500 +.0002 −.0000 DIA ROLL
.212 .216 DIA X .500 .515 DEEP AND C DRILL
TAP 1/4-20 UNC-2B
.249 .253 DIA THRU CSK 100° .270 .290 DIA 2 PLACES
.265 .271 DIA THRU
23.649 23.629
21.941 21.939
19.50
15.37
14.68
10.62
7.00
3.500
1.903

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. REMOVE BURRS AND BREAK SHARP EDGES .005-.015
3. ALL RADII AND FILLETS TO BE .125 UNLESS OTHERWISE SPECIFIED
4. UNLESS OTHERWISE SPECIFIED FINISH 125/
5. FINISH-SEE NOTE 6 FOR PLATED AREAS. ALL NON PLATED SURFACES TO BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK. PLUG ALL HOLES AND THREADED INSERT HOLES FOR ANODIZING
6. THESE SURFACES TO BE FREE FROM ANODIZE AND PLATED. PLATE (ELECTRODEPOSITED) PER QQ-C-320, CLASS II, TYPE 2, .0002 TO .0004 THICK. HARDNESS, ROCKWELL C70-72. DIMENSIONS APPLY AFTER PLATING, FINISH 32/ AFTER PLATING
7. COAT THREADS OF FIND NO.1 AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
8. INSTALL FIND NO.2 PER ND 1002121
9 PAINT INDICATED SURFACES WITH 1010729-2 LIGHT GREY EPOXY RESIN ENAMEL PER ND

6	NAS 1394C
1	1003149
QTY REQ'D	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ±0°30'
DO NOT SCALE THIS DRAWING

MATERIAL
6061-T6 AL PER QQ-A-325
TEMPER T6

HEAT TREATMENT

FINAL FINISH
SEE NOTES 4&5

NEXT ASSY	USED ON
1003196	
APPLICATION	

INSTRUMENTATION

DRAWN R. McGonagle

CHECKED

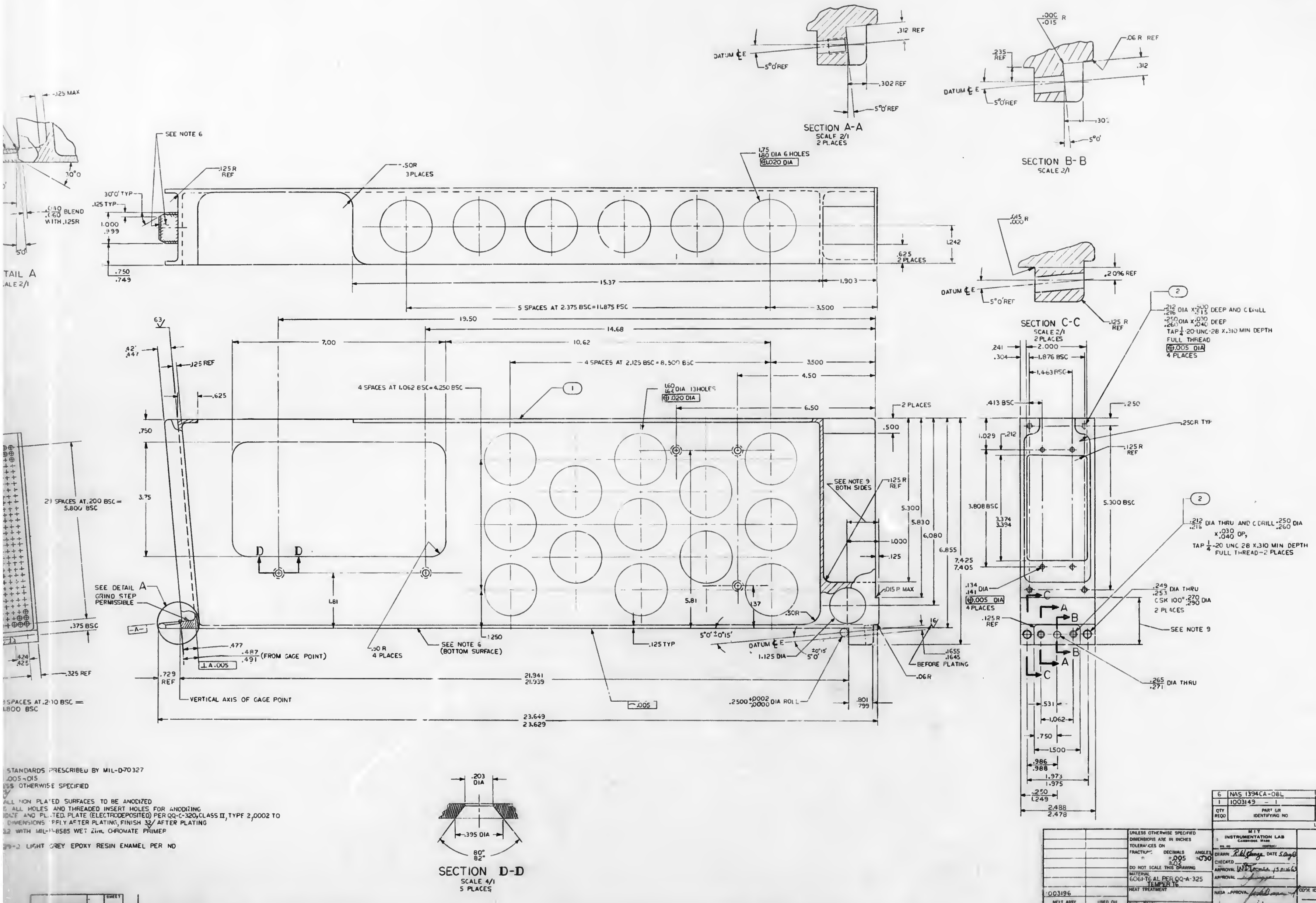
APPROVAL

APPROVAL

NASA APPROVAL

1003149 G SHEET 1

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS 02545		
A	REVISED PER TORR 02693	20 AUG 63	WK
B	CHANGE PER TORR 02107	4-5-64	WK
C	REVISED PER TORR 03647	10-1-63	WK
D	REVISED PER TORR 04029		WK
E	REVISED PER TORR 04519	-6-63	WK
	REVISED PER TORR 05782		WK
G	REVISED PER TORR 56227		WK


SECTION A-A
SCALE 2/1
2 PLACES
SECTION B-B
SCALE 2/1
SECTION C-C
SCALE 2/1
2 PLACES
SECTION D-D
SCALE 4/1
5 PLACES
DETAIL A
SCALE 2/1
DATUM ℄ E
5°0' REF
.312 REF
.302 REF
.06 R REF
.2096 REF
SEE NOTE 6
SEE NOTE 9
SEE NOTE 9 BOTH SIDES
SEE NOTE 6 (BOTTOM SURFACE)
SEE DETAIL A
GRIND STEP PERMISSIBLE
VERTICAL AXIS OF GAGE POINT
.487 .491 (FROM GAGE POINT)
1.75 1.80 DIA 6 HOLES
1.60 1.64 DIA 13 HOLES
5 SPACES AT 2.375 BSC = 11.875 BSC
4 SPACES AT 2.125 BSC = 8.500 BSC
4 SPACES AT 1.062 BSC = 4.250 BSC
21 SPACES AT .200 BSC = 5.800 BSC
.2500 +.0002 -.0000 DIA ROLL
BEFORE PLATING
23.649 23.629
21.941 21.939
19.50
15.37
14.68
10.62
7.00
.212 .216 DIA X .200 .215 DEEP AND C DRILL .250 .260 DIA X .030 .040 DEEP TAP 1/4-20 UNC-2B X .310 MIN DEPTH FULL THREAD 4 PLACES
.212 .216 DIA THRU AND C DRILL .250 .260 DIA X .030 .040 DP, TAP 1/4-20 UNC 2B X .310 MIN DEPTH FULL THREAD-2 PLACES
.249 .253 DIA THRU CSK 100° .270 .290 DIA 2 PLACES
.265 .271 DIA THRU
.134 .141 DIA 4 PLACES
.203 DIA
.395 DIA
80° 82°
①
②

STANDARDS PRESCRIBED BY MIL-D-70327
.005-.015
SS OTHERWISE SPECIFIED

ALL NON PLATED SURFACES TO BE ANODIZED
ALL HOLES AND THREADED INSERT HOLES FOR ANODIZING
DCE AND PLATED. PLATE (ELECTRODEPOSITED) PER QQ-C-320, CLASS II, TYPE 2, .0002 TO
DIMENSIONS APPLY AFTER PLATING, FINISH 32 AFTER PLATING
2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER

-2 LIGHT GREY EPOXY RESIN ENAMEL PER ND

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
6	NAS 1394CA-08L	INSERT, THREADED, SELF LOCKING	2
1	1003149 - 1	G AND N HARNESS TRAY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003196	

APPLICATION

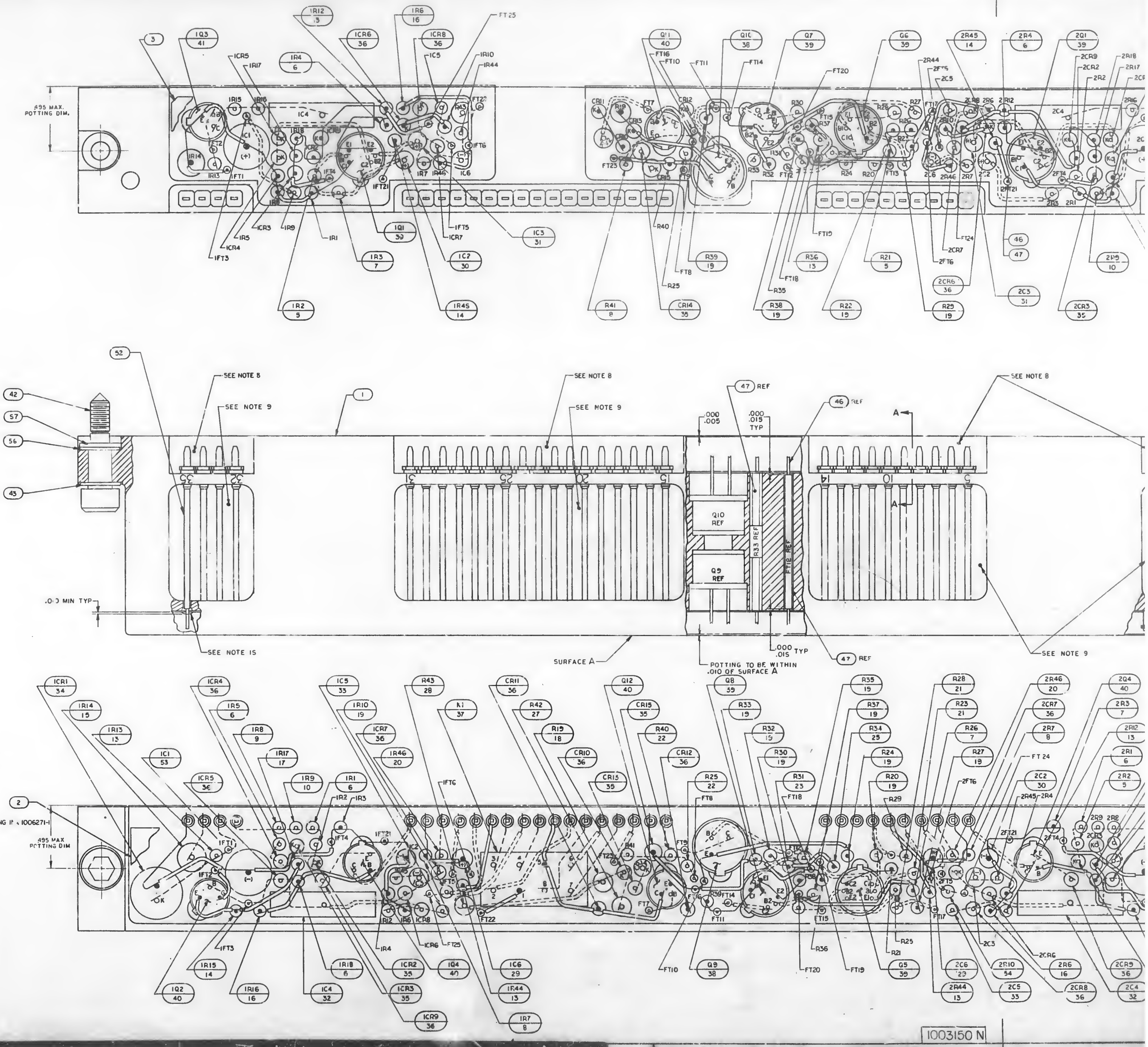
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ±0°30'
DO NOT SCALE THIS DRAWING
MATERIAL 6061-T6 AL PER QQ-A-325 TEMPER T6
HEAT TREATMENT
FINAL FINISH SEE NOTES 4 & 5

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Rich George DATE 5 Aug 63
CHECKED
APPROVAL W.D. Thomas 13 Aug 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

G AND N HARNESS TRAY

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003149
SCALE 1/1
WT
SHEET 1 OF 1

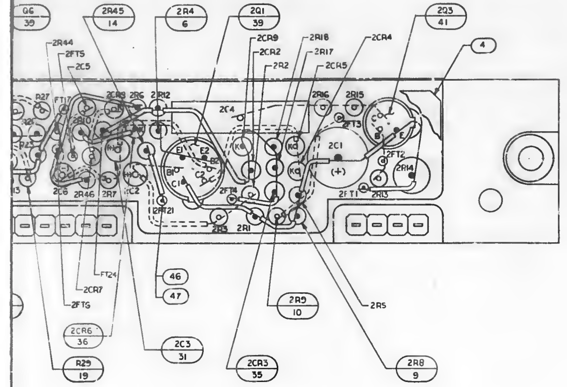


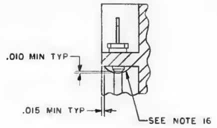
NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
4. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. DASHED LINE INDICATES FIRST LEVEL WIRING AND SOLID LINE INDICATES SECOND LEVEL WIRING
6. MARK .08/.10 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2 USING MARKING INK 1006271-1 AND SERIALIZE PER ND1002023
7. MARK .24/.26 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
8. INDICATED AREA TO BE FREE FROM ENCAPSULATION
9. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHENE FOAM)
10. AR DENOTES AS REQUIRED
11. FT DENOTES FEED THRU
12. STAKE ALL COMPONENT PER ND1002009
13. K INDICATES CATHODE END OF DIODE
14. VALUE TO BE DETERMINED BY ELECTRICAL TEST 1R2 2R2 AND R21 TO BE SELECTED FROM CHART A
15. SEAL AROUND TERMINALS PER ND1002004, TYPE VI
16. SEAL INSULATORS AND TERMINALS TO HEADER PER ND1002004, TYPE VI
17. WORKMANSHIP, FABRICATION AND INSPECTION REQUIREMENTS PER ND1002069

1003150 N

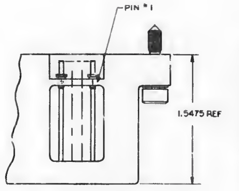
1003150 N

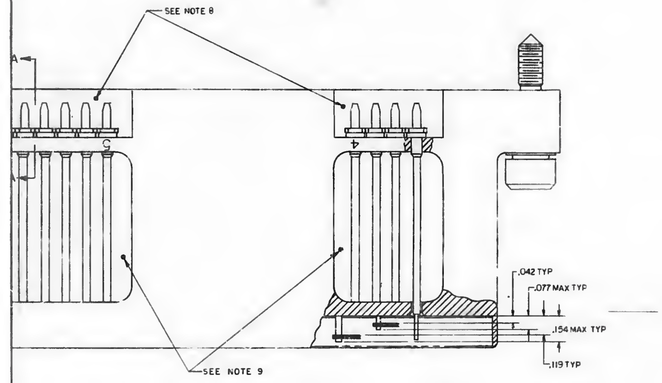
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03136	[illegible]	[illegible]
B	REVISED PER TDRR 03470	[illegible]	[illegible]
C	REVISED PER TDRR 04036	[illegible]	[illegible]
D	REVISED PER TDRR [illegible]	[illegible]	[illegible]
E	REVISED PER TDRR 04512	[illegible]	[illegible]
F	REVISED PER TDRR 04732	[illegible]	[illegible]
G	REVISED PER TDRR 05584	[illegible]	[illegible]
H	REVISED PER TDRR 05786	[illegible]	[illegible]
J	REVISED PER TDRR 06444	[illegible]	[illegible]
K	REVISED PER TDRR 11243 DR R. Edwards CHK OWl RTM	9/10/64	[illegible]
L	REVISED PER TDRR 13118 DR R. Shutout CHK OWl RTM	12/7/64	[illegible]
M	REVISED PER TDRR 14474 DR Dabulo CHK OWl RTM		
N	REVISED PER TDRR 17255 DR D.A. Clermont CHK RMS RTM	[illegible]	[illegible]

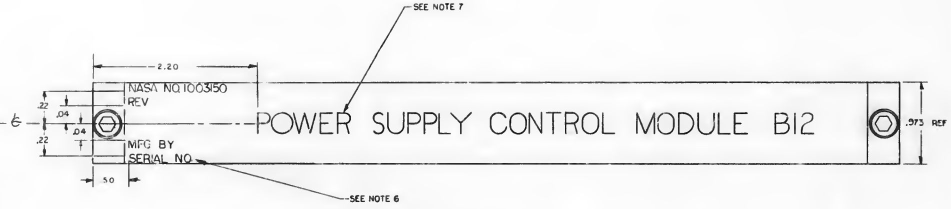




PARTIAL SECTION A-A

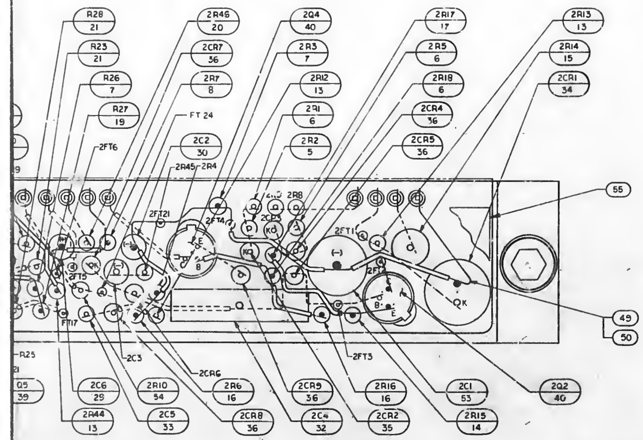






MARKING VIEW
SCALE 2/1

CHART A	
1006750-32	1006750-42
1006750-33	1006750-43
1006750-34	1006750-44
1006750-35	1006750-119
1006750-36	1006750-121
1006750-37	1006750-122
1006750-38	1006750-123
1006750-39	1006750-124
1006750-40	1006750-125
1006750-41	



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1006098	SCHEMATIC	REF
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	57
2	1004546-3	WASHER, FLAT	56
1	1004277	INSULATOR	55
1	1006750-70	RESISTOR	54
2	1006755-134	CAPACITOR	53
A R	1006776-20	INSULATION, SLEEVING	52
~~2~~	~~1008025-2~~	~~BUSHING, INSULATOR~~	~~51~~
A R	1006776-21	INSULATION, SLEEVING	50
A R	1006757-1	WIRE, ELEC	49
~~8~~	~~1008025-1~~	~~BUSHING, INSULATOR~~	~~48~~
A R	1006776-22	INSULATION SLEEVING	47
A R	1006757-8	WIRE, ELEC	46
~~2~~	[illegible]	~~DRIVE CYLINDER~~	~~45~~
~~2~~	[illegible]	~~PIN, SPRING~~	~~44~~
2	1004546-1	WASHER, FLAT	43
2	1004579-1	SCREW, JACKING	42
2	1003520-2	TRANSISTOR POTTED	41
6	1003520-1	TRANSISTOR POTTED	40
6	1010376-1	TRANSISTOR	39
2	1003089-2	TRANSISTOR POTTED	38
1	1006815-2	RELAY	37
15	1006751	DIODE	36
7	1006838	DIODE	35
2	1003188-1	DIODE, POTTED	34
2	1006777-24	CAPACITOR	33
2	1006793-30	CAPACITOR	32
2	1006755-64	CAPACITOR	31
2	1006755-26	CAPACITOR	30
2	1006755-57	CAPACITOR	29
1	1006760-32	RESISTOR	28
1	1006760-56	RESISTOR	27
~~1~~	~~1006750-34~~	~~RESISTOR~~	~~26~~
1	1006750-25	RESISTOR	25
~~2~~	~~1006750-44~~	~~RESISTOR~~	~~24~~
1	1006750-42	RESISTOR	23
2	1006750-62	RESISTOR	22
2	1006750-73	RESISTOR	21
2	1006750-35	RESISTOR	20
13	1006750-56	RESISTOR	19
1	1006760-28	RESISTOR	18
2	1006750-28	RESISTOR	17
4	1006750-22	RESISTOR	16
2	1010389-43	RESISTOR	15
4	1006750-15	RESISTOR	14
7	1006750-32	RESISTOR	13
~~2~~	~~1006750-66~~	~~RESISTOR~~	~~12~~
~~1~~	~~1006750-56~~	~~RESISTOR~~	~~11~~
2	1006750-60	RESISTOR	10
2	1006750-50	RESISTOR	9
3	1006750-43	RESISTOR	8
3	1006750-39	RESISTOR	7
8	1006750-24	RESISTOR	6
3	SEE NOTE 14	RESISTOR	5
1	1004218	INSULATOR	4
1	1004217	INSULATOR	3
1	1004219	INSULATOR	2
1	1003151	HEADER, HOUSING ASSY	1

LIST OF MATERIALS

1003150 N

1003184	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN DATE
CHECKED
APPROVAL W.T. Cochran 8 Nov 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

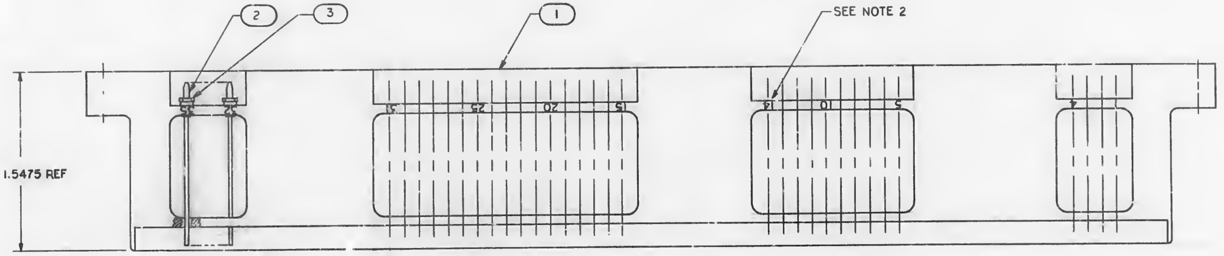
CONTROL MODULE
ASSEMBLY B12
A.G.C. POWER SUPPLY

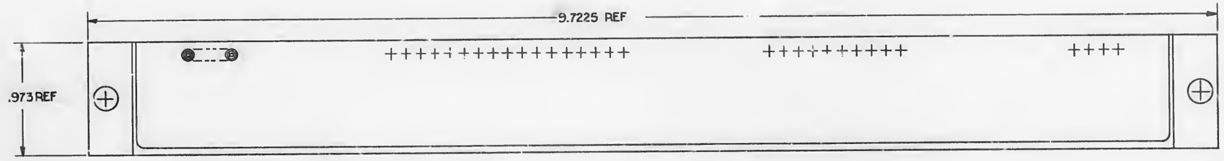
CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003150
SCALE 4/1
WT
SHEET 1 OF 1

1003150 N

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 02545			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 02842	8-28-63	





NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARK .060/.080 HIGH WHITE PER ND1002019
3. ASSEMBLE FIND NO.2&3 PER ND1002136
4. AR INDICATES AS REQUIRED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
35	1006775	INSULATOR, WRAPOST, MALE MIN	3
35	1006782-5	CONTACT WRAPOST, MALE MIN	2
1	1004158	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003150	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN DATE 7 Aug 63
CHECKED Kingsbury 13 Aug 63
APPROVAL W B Turner 13 Aug 1663
APPROVAL
NASA APPROVAL Jack Barnard
MIT APPROVAL W Kupfer 14 Aug 63

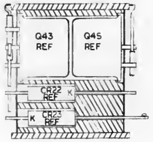
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER HOUSING ASSEMBLY
CONTROL MODULE
AGC POWER SUPPLY

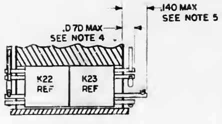
CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003151
SCALE 2/1
WT
SHEET 1 OF 1

1003151 A

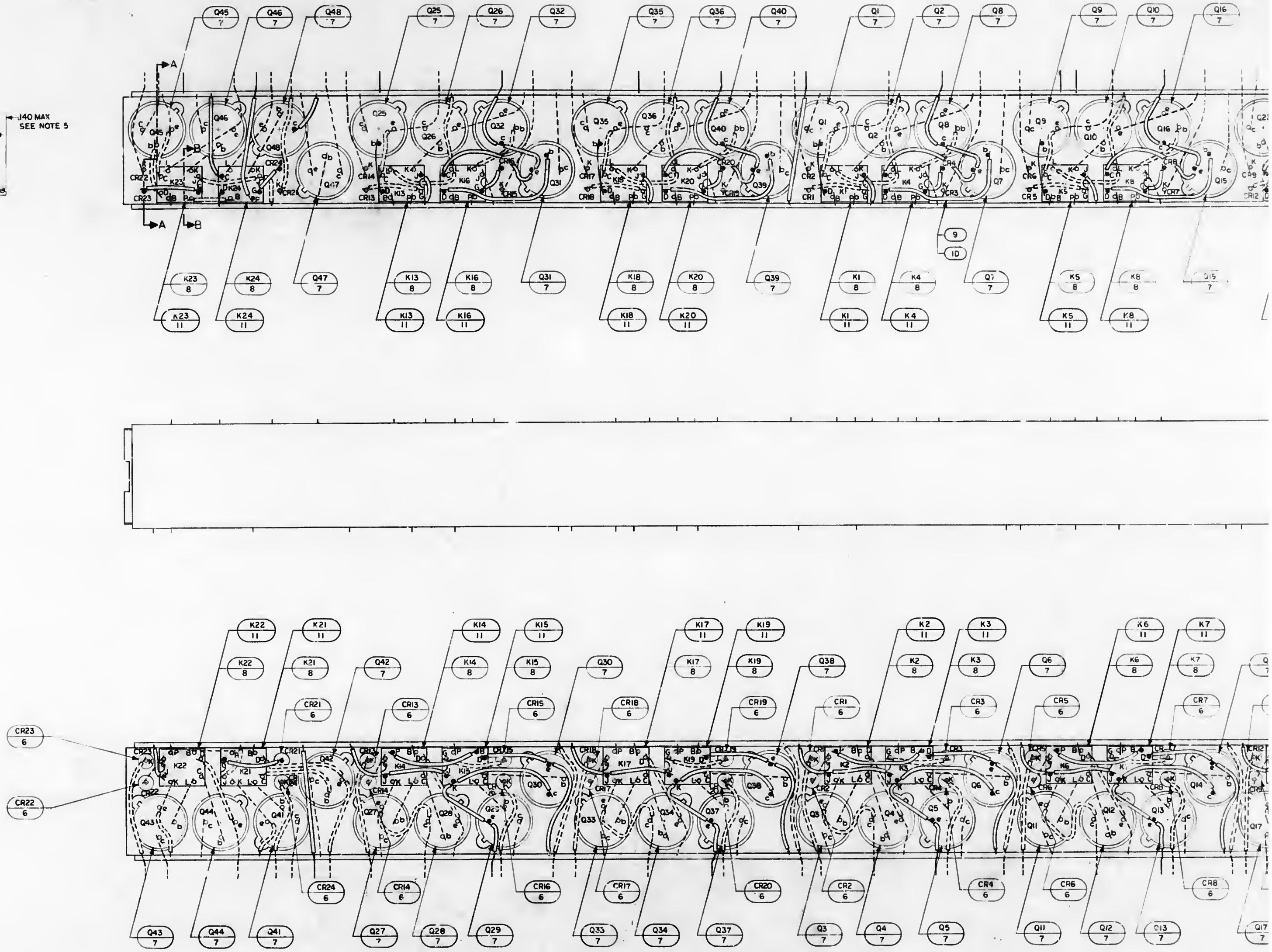
NOTICE - [illegible]



SECTION A-A



SECTION B-B

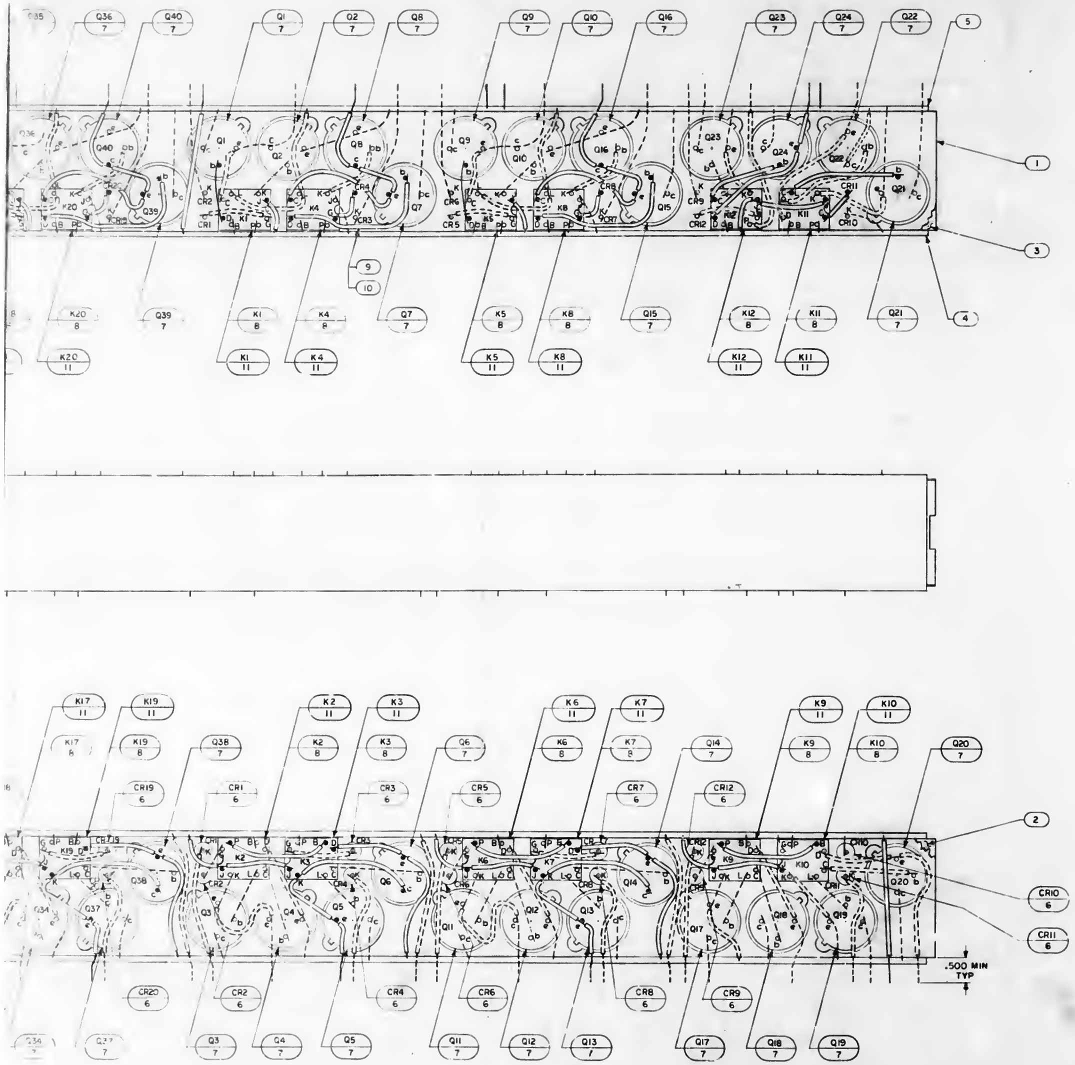


NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE FIND NOS. 6 THRU 8 PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. DASH LINES INDICATE FIRST LEVEL WIRING AND SOLID LINES INDICATE SECOND LEVEL WIRING
7. K DENOTES CATHODE SIDE OF DIODE
8. AR DENOTES AS REQUIRED
9. IDENTIFY WITH NASA DWG NO. PER ND1002019
10. WORKMANSHIP, FABRICATION, AND INSPECTION REQUIREMENTS PER ND1002069
11. THE ORIGINAL CONFIGURATION IS IDENTIFIED BY THE DRAWING NUMBER AND A -000 SUFFIX

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03850	10-9-63	WK
B	REVISED PER TDRR 04483	11-5-63	WK
C	REVISED PER TDRR 05783		WK
D	REVISED PER TDRR 17237 DR M. Rafaly CHK	8/25/65	
E	REVISED PER TDRR 21817 DR R. Lubal CHK		

REVISIONS TDRR 02623



QTY REQD	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
╳	╳	1006074	SCHEMATIC	REF
24	╳	1003084-021	K CORE ASSY	
AR	AR	1006776-22	INSULATION SLEEVING	10
AR	AR	1006757-1	WIRE, ELECTRICAL	9
╳	24	1003084-000	K CORE ASSY	8
48	48	1006759	TRANSISTOR	7
24	24	1006751	DIODE	6
1	1	1003141-2	MATRIX	5
1	1	1003141-1	MATRIX	4
1	1	1004214-2	INSULATOR	3
1	1	1004214-1	INSULATOR	2
1	1	1004530	HOLDER, COMPONENT	1
-011	-000	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003153	

APPLICATION

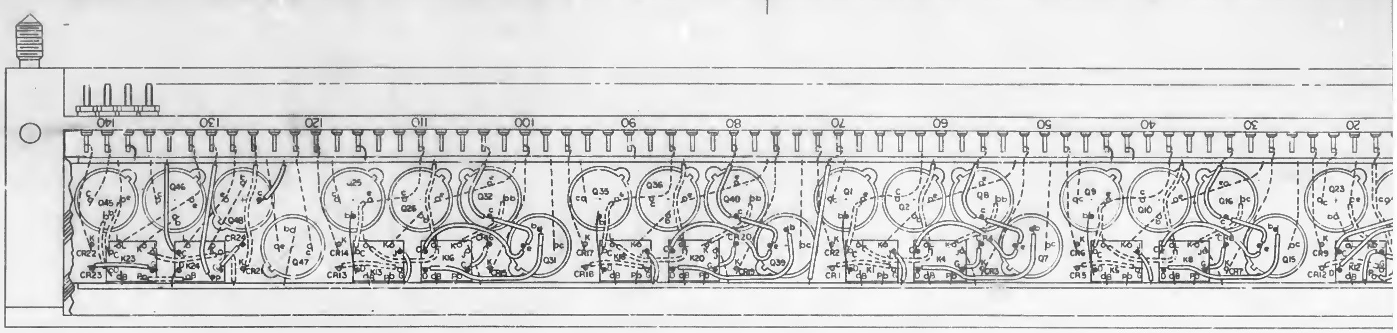
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

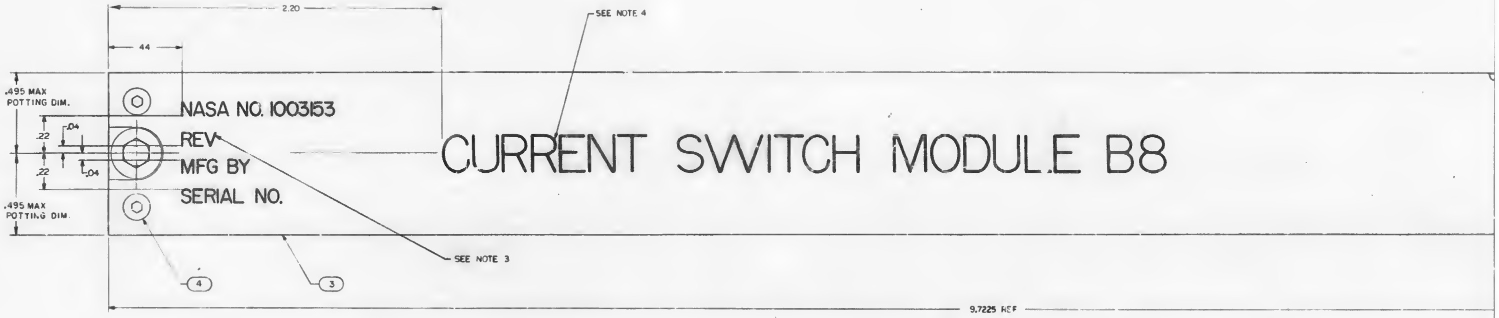
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

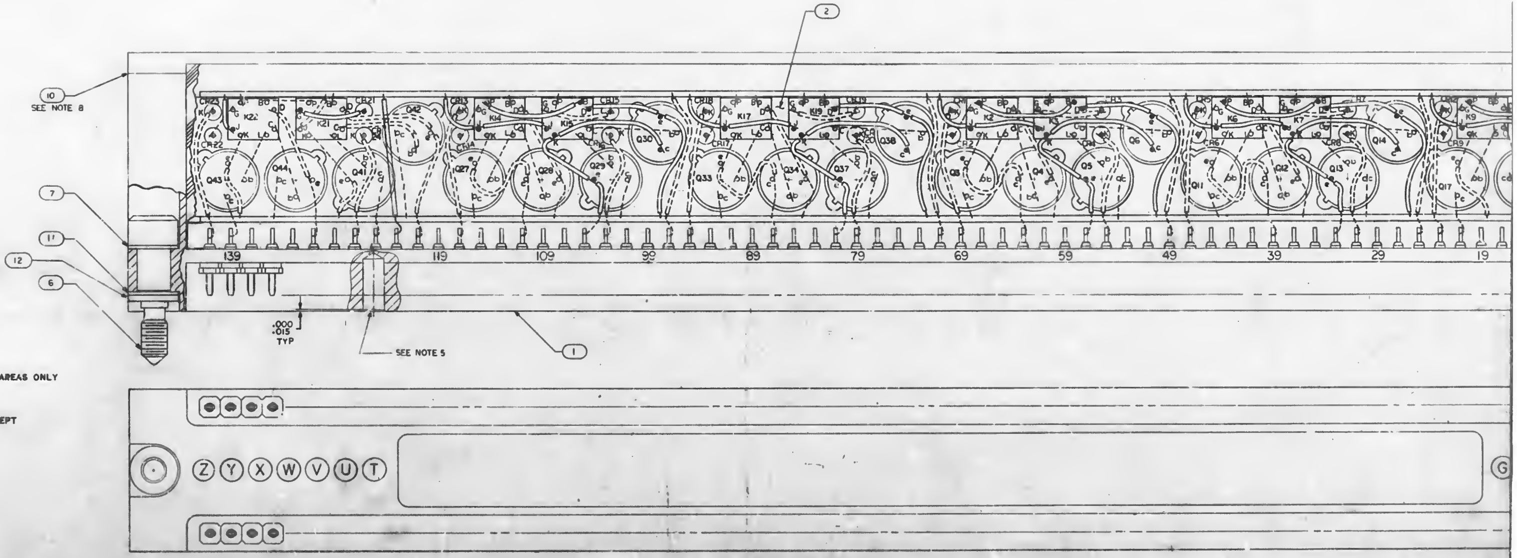
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CURRENT SWITCH MODULE B8
SUB-ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO 1003152
SCALE 4/1
WT
SHEET 1 OF 1





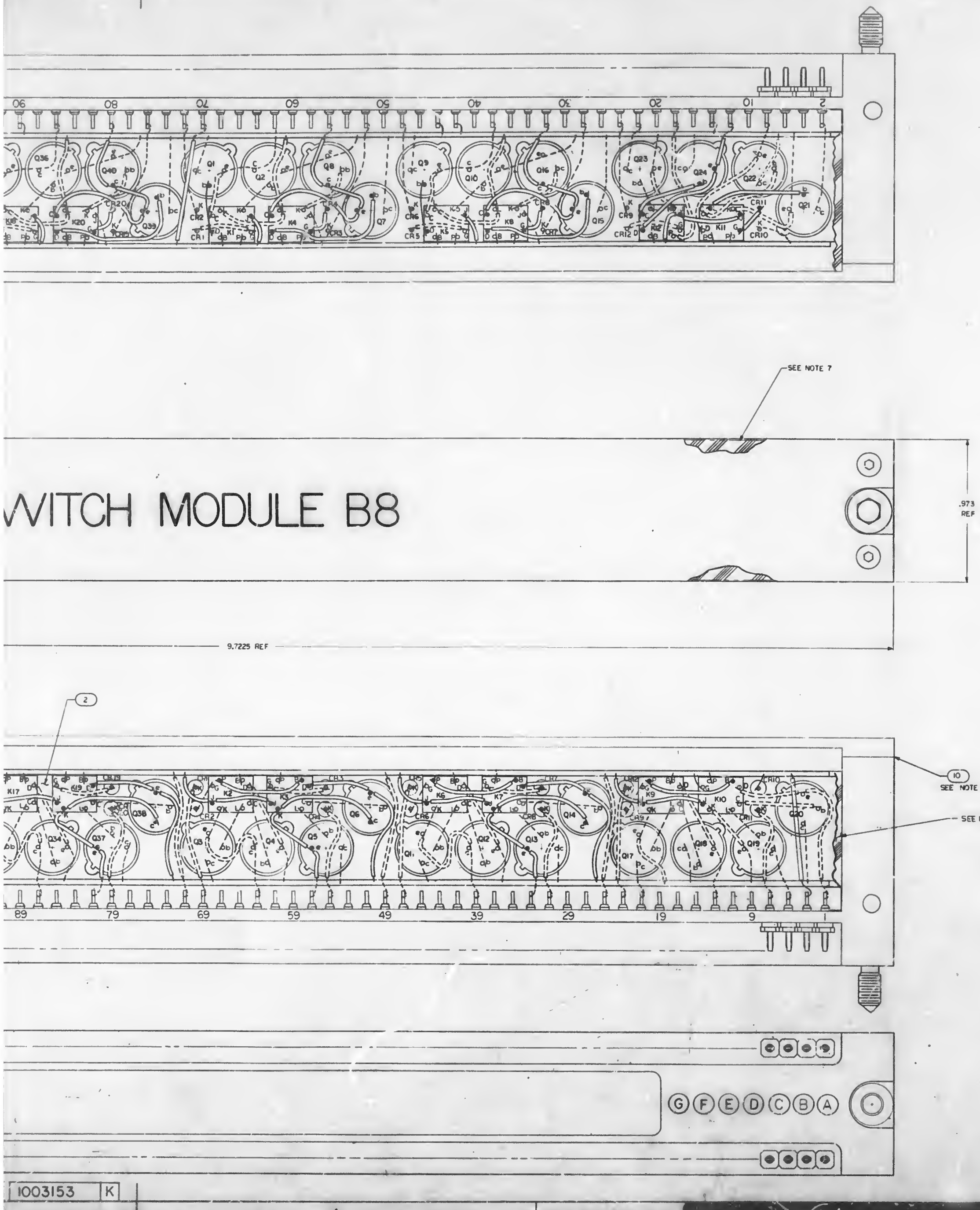


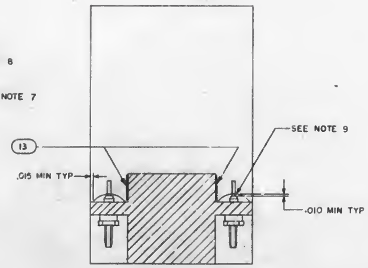
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .08/.10 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2 USING MARKING INK 1006271-1, SERIALIZE PER ND1002027
4. MARK .24/.26 HIGH WHITE PER ND1002019 AND ND1002127 TYPE II CLASS I USING MARKING INK 1006271-1
5. FILL KEYING HOLES MARKED A,B,C,F,T,V,W,X USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183 EXCEPT DO NOT EVACUATE AFTER FILLING
6.
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREAS ONLY
8. APPLY FIND NO. 10 TO INTERFACE PRIOR TO ASSY
9. SEAL INSULATORS AND TERMINALS AS SHOWN PER ND1002004 TYPE VI
10. AR DENOTES AS REQUIRED
11. WORKMANSHIP, FABRICATION AND INSPECTION REQUIREMENTS PER ND1002060 EXCEPT TWIST WIRES TO MALCO TERMINALS WHERE REQUIRED

1003153	K

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 0[illegible]	[illegible]	[illegible]
B	REVISED PER TDRR 03635	10-8-[illegible]	[illegible]
C	REVISED PER TDRR 03750	[illegible]	[illegible]
D	REVISED PER TDRR 04391	[illegible]	[illegible]
E	REVISED PER TDRR 04766	[illegible]	[illegible]
F	REVISED PER TDRR 05783	[illegible]	[illegible]
G	REVISED PER TDRR 11243 DR R. Edwards CHK [illegible] RTM	9/17/64	[illegible]
H	REVISED PER TDRR 12214 DR J.P. [illegible] CHK [illegible] RTM	9/24/64	[illegible]
J	REVISED PER TDRR 13080 DR [illegible] CHK [illegible] RTM	10/21/64	[illegible]
K	REVISED PER TDRR 17237 DR M. [illegible] CHK P.H.G. [illegible]	[illegible]	[illegible]

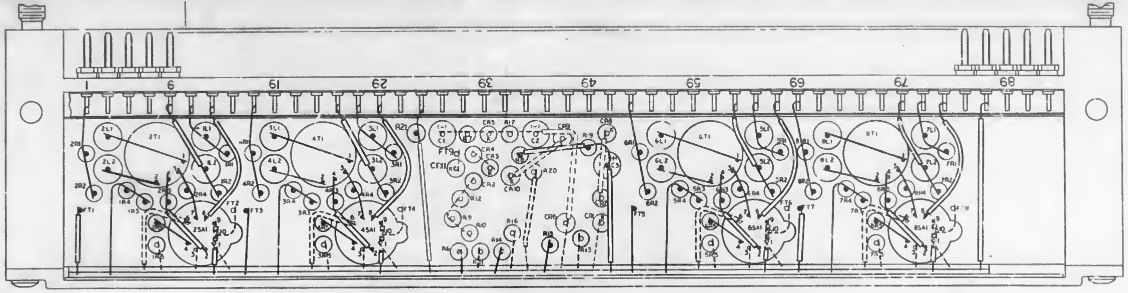


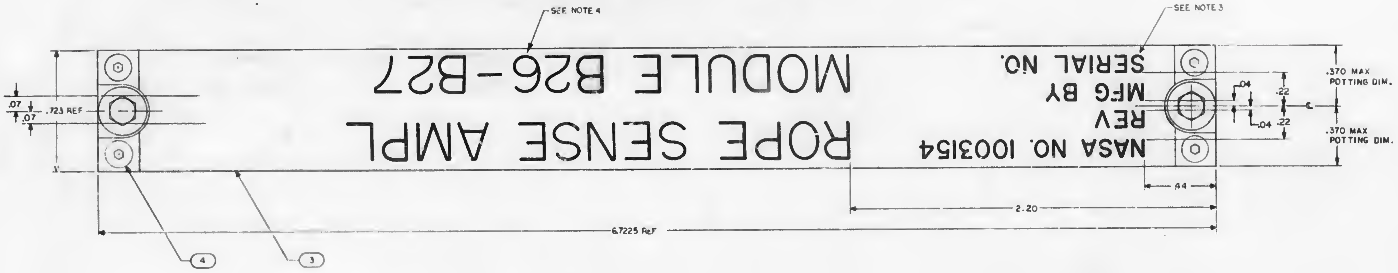


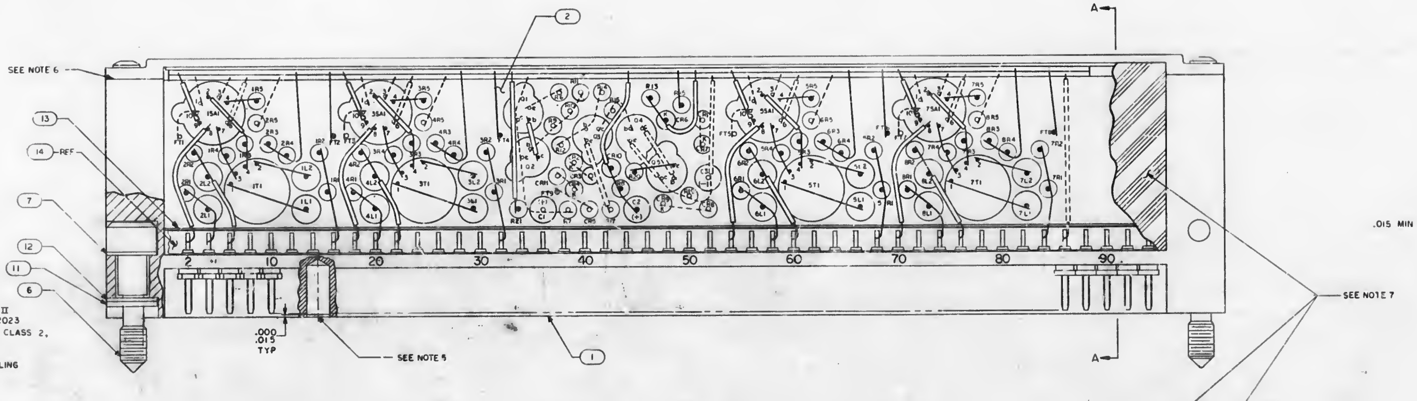
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006826 12	TAPE, ELECTRICAL	13
2	MS16633-4015	RING RETAINING, EXTERNAL 'E'	12
2	1004546-3	WASHER, FLAT	11
AP	1006879	SILICONE COMPOUND THERMOCONDUCTIVE	10
~~8~~	~~1004117~~	~~PLUG, KEYING~~	~~9~~
~~2~~	~~MS9/1068-1100~~	~~PIN, SPRING~~	~~8~~
2	1004548-1	WASHER, FLAT	7
2	1004578-1	SCREW, JACKING	6
~~2~~	~~1004207~~	~~DRIVE, [illegible]~~	~~5~~
4	1004273-11	SCREW, CAP, BUTTON HD	4
1	1003112	COVER	3
1	1003152	CURRENT SWITCH MODULE SUB-ASSY	2
1	1003128	HEADER HOUSING ASSY	1

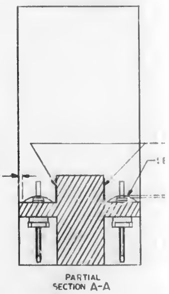
LIST OF MATERIALS

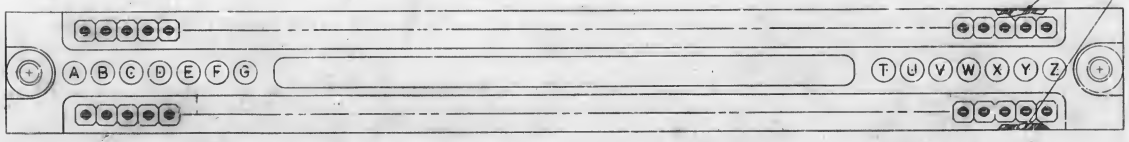
1003124		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.02 ANGLES ±	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.	MANNED SPACECRAFT CENTER HOUSTON TEXAS
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN [illegible] DATE [illegible] CHECKED [illegible] APPROVAL [illegible] 20 [illegible] APPROVAL [illegible]	CURRENT SWITCH MODULE B8 ASSEMBLY
APPLICATION		MATERIAL —//— HEAT TREATMENT —//— FINAL FINISH —//—	NASA APPROVAL [illegible] 1ST APPROVAL [illegible]	CODE IDENT NO. ——— SIZE J NASA DRAWING NO. 1003153 SCALE 4/1 WT SHEET 1 OF 1











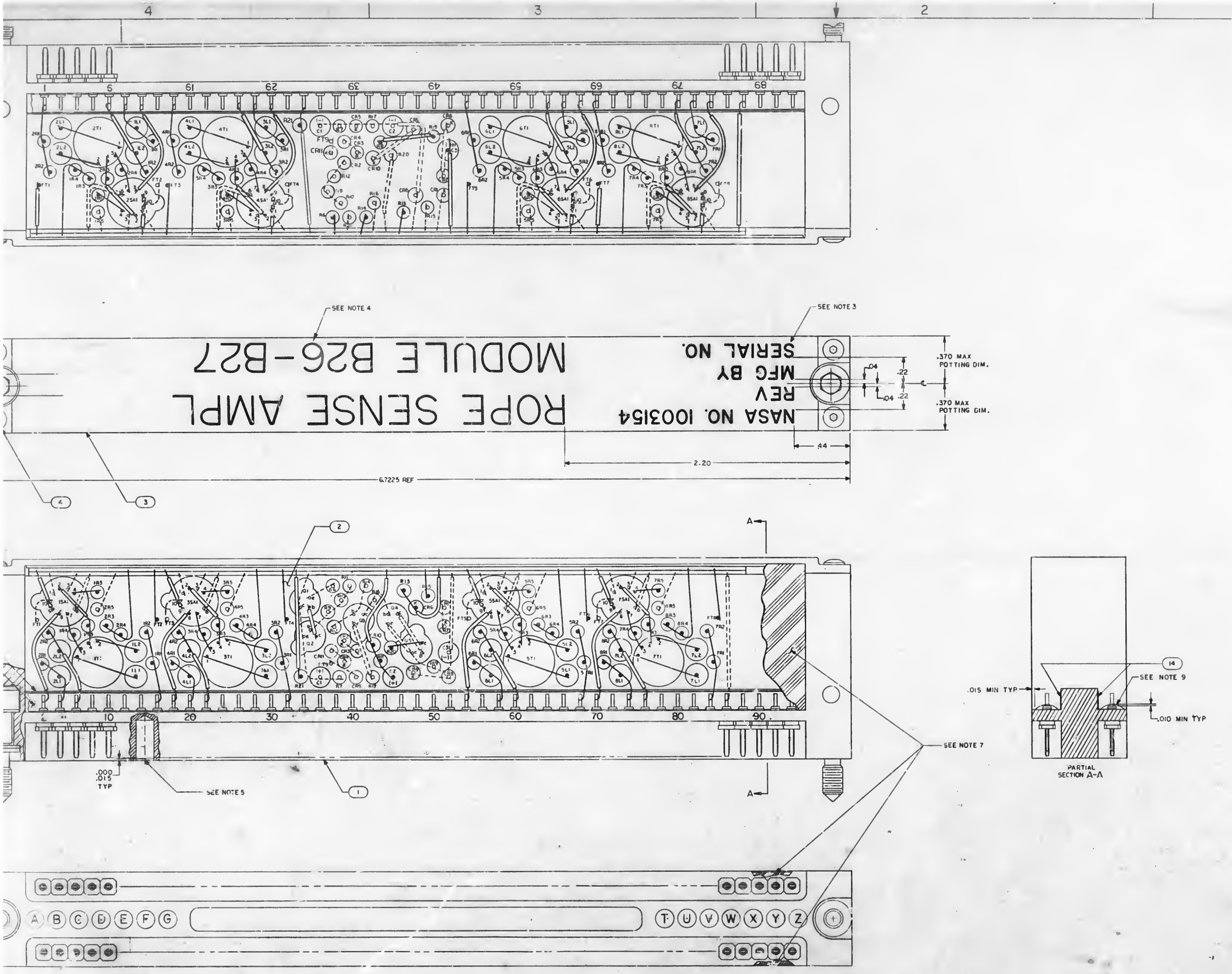
NOTE
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .08/.10 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1, SERIALIZE PER ND1002023
4. MARK .24/.26 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
5. FILL KEYING HOLES MARKED A F G W X Y USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183 EXCEPT DO NOT EVACUATE AFTER FILLING
6. APPLY FIND NO.10 TO INTERFACE PRIOR TO ASSEMBLY
7. ENCAPSULATE MODULE PER ND1002032 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
8. BOND FIND NO. 2 TO FIND NO. 1 USING FIND NO. 13
9. SEAL INSULATORS AND TERMINALS TO HEADER PER ND1002004 TYPE VI
10. AR DENOTES AS REQUIRED
11. WORKMANSHIP, FABRICATION AND INSPECTION REQUIREMENTS PER ND1002063, EXCEPT TWIST WIRES TO MALCO TERMINALS WHERE REQUIRED

1003184
NEXT ASSY

1003154 H

1003154 H E1/2

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03497	[illegible]	[illegible]
B	REVISED PER TDRR 0454	[illegible]	[illegible]
C	REVISED PER TDRR [illegible]	[illegible]	[illegible]
D	REVISED PER TDRR 05392	12-19-63	[illegible]
E	REVISED PER TDRR 07606 DR [illegible] CHK [illegible]	[illegible]	
F	REVISED PER TDRR 11243 DR R Edwards CHK [illegible]	9/ /65	HC
G	REVISED PER TDRR 13116 DR [illegible] CHK [illegible]	[illegible]	HC
H	REVISED PER TDRR 17119 DR [illegible] CHK [illegible]	[illegible]	[illegible]



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006826-12	INSULATION TAPE, ELECTRICAL	14
AR	1006806-6	TAPE, ELECTRICAL	13
2	1004546-3	WASHER, FLAT	12
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	11
AR	1006879	SILICONE COMPOUND THERMOCONDUCTIVE	10
~~6~~	~~[illegible]~~	~~PLUG, KEYING~~	~~9~~
~~2~~	~~[illegible]~~	~~PIN, SPRING~~	~~8~~
2	1004546-1	WASHER, FLAT	7
2	1004579-1	SCREW, JACKING	6
~~2~~	~~[illegible]~~	~~DRIVE CYLINDER~~	~~5~~
4	1000093-2	SCREW, BUTTON HEAD	4
1	1003150	COVER	3
1	1003147	ROPE SENSE AMP, MODULE SUB-ASSY	2
1	1003148	HEADER HOUSING ASSY	1

LIST OF MATERIALS

1003184	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

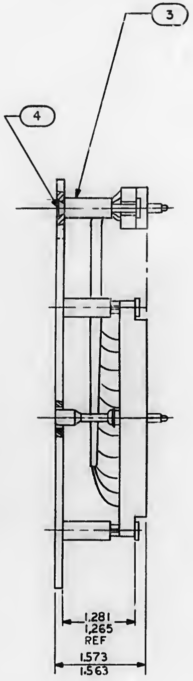
ROPE SENSE AMPLIFIER
B26-B27 MODULE
ASSEMBLY

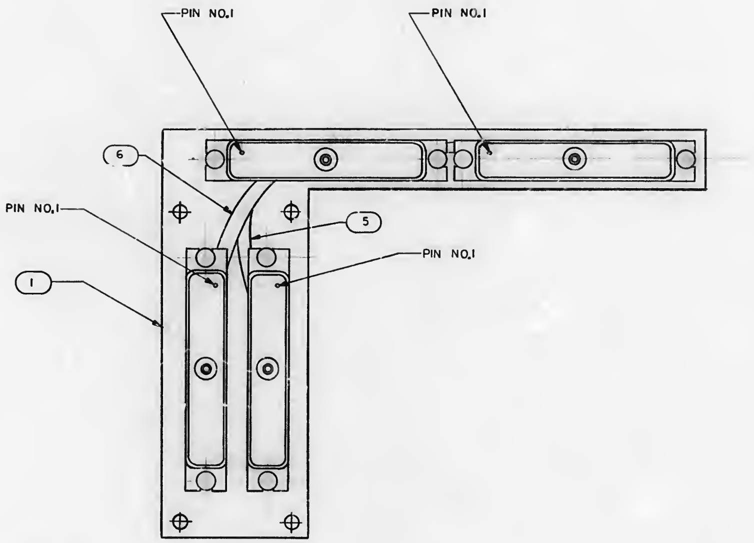
CODE IDENT NO. —
SIZE J
NASA DRAWING NO 1003154
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 02545

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03843	10 Oct 63	WR
B	REVISED PER TDRR 76429	4/14/64	JW





NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. PART DESIGN CONTROLLED BY NAA ICD MH01-01002-116

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1003202	WIRING HARNESS 'D'	6
1	1003201	WIRING HARNESS 'C'	5
8	1010477-25	SCREW, FLAT HD SOCKET, HEX	4
8	1004276	SPACER, SPECIAL	3
~~4~~	~~1010641-244~~	~~CONNECTOR, PLUG, ELECTRICAL~~	~~2~~
1	1003156	CONNECTOR COVER PLATE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003197	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R.W. Kunze DATE 8 Aug 63
CHECKED
APPROVAL W. Starnes 13 Aug 63
APPROVAL D. Driggar
NASA APPROVAL Jack Barnard
MIT APPROVAL W Kupfer 14 Aug 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

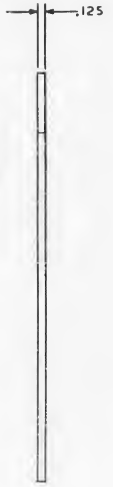
CONNECTOR COVER PLATE ASSEMBLY

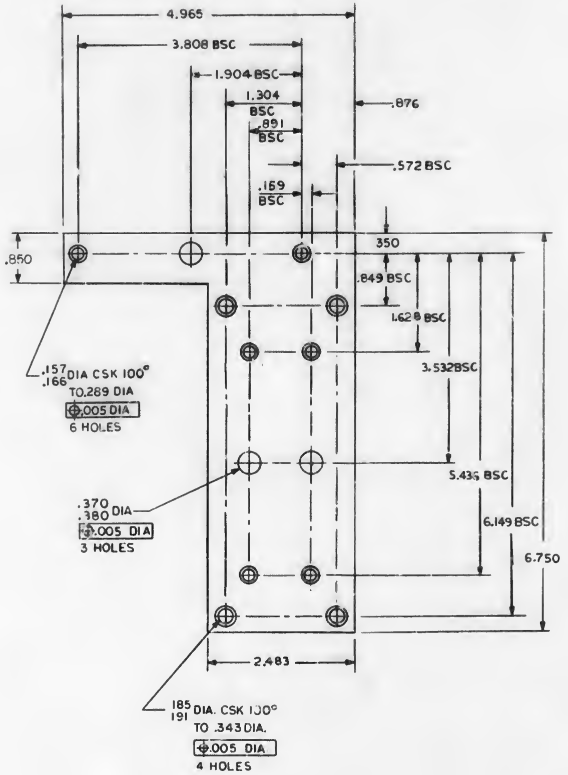
CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003155
SCALE 1/1
WT
SHEET 1 OF 1

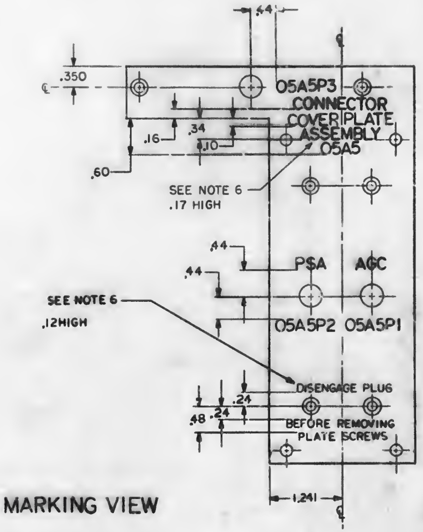
1003155 B

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 02.45			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03173	7-16-63	WK
B	REVISED PER TDRR 03625	10-3-63	WK
C	REVISED PER TDRR 04023	17Oct63	WK
D	REVISED PER TDRR 04358	10-30-63	WK
E	REVISED PER TDRR 07643 DR MM CHK OW	1/4/64	
F	REVISED PER TDRR 11309 DR CHK R.B. RTM	8/4/64	







MARKING VIEW

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: AL ALY 5052 H32 SHEET QQ-A-318
3. REMOVE BURRS AND BREAK SHARP EDGES
4. FINISH: ANODIZE PER MIL-A-8625 TYPE I (CHROMIC ACID) DYED MEDIUM GRAY
5. PART DESIGN CONTROLLED NAA ICD-MH01-01002-115
6. MARK AS SHOWN, BLACK PER ND 1002019 AND ND 1002122 TYPE II, CLASS I, USING 1006271-10
7. PAINT ALL SURFACES WITH 1010729-1 MED. GRAY EPOXY RESIN ENAMEL PER ND

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1003457	1003400

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 4

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN R.W. Krage DATE 7 Aug 63
CHECKED
APPROVAL W.B. Turner 8 Aug 63
APPROVAL
NASA APPROVAL Jack Bassant
MIT APPROVAL W Kupfer 14 Aug 63

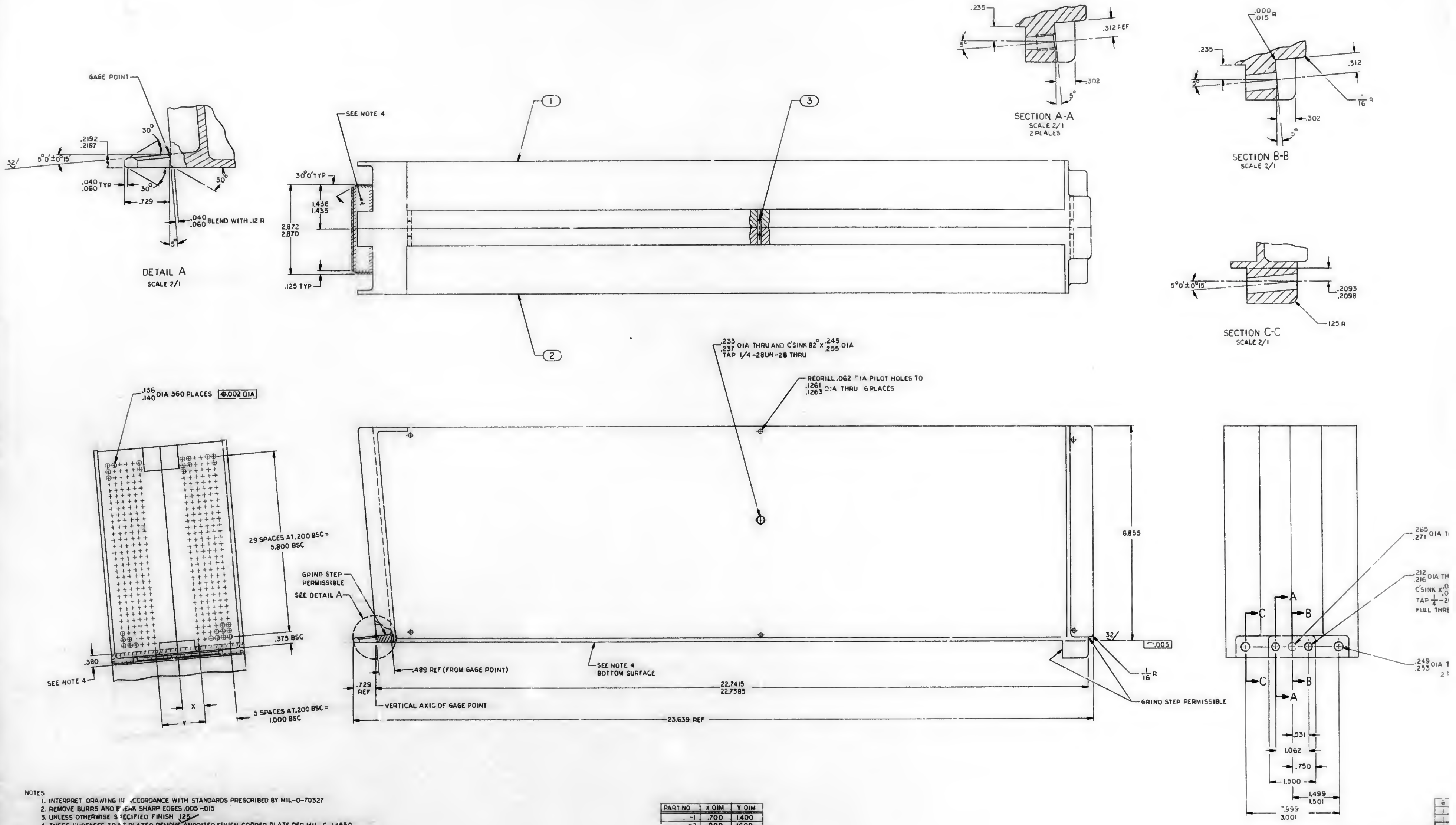
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONNECTOR COVER PLATE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003156
SCALE 1/1
WT
SHEET 1 OF 1

1003156 E

[illegible]



NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. REMOVE BURRS AND BREAK SHARP EDGES .005 -.015
3. UNLESS OTHERWISE SPECIFIED FINISH 125✓
4. THESE SURFACES TO BE PLATED. REMOVE ANODIZED FINISH. COPPER PLATE PER MIL-C-14550, CLASS 2, THEN ELECTROLESS NICKEL PLATE PER MIL-C-26074A, CLASS I. ALL DIMENSIONS TO, AND FINISHES OF, PLATED SURFACES APPLY AFTER PLATING. FINISH MACHINING AFTER PLATING IS PERMISSIBLE AS LONG AS MINIMUM SPECIFIED THICKNESS OF NICKEL PLATE REMAINS
5. FINISH - SEE NOTE 4 FOR PLATED AREAS. ALL NON PLATED SURFACES TO BE ANODIZED PER MIL-M-3171, TYPE IV. REMOVE ALL DOWEL PINS AND PLUG ALL DOWEL HOLES AND THREADED INSERT HOLES BEFORE ANODIZING

PART NO	X DIM	Y DIM
-1	.700	1.400
-2	.800	1.600

NEXT ASSY	USED ON
APPLICATION	

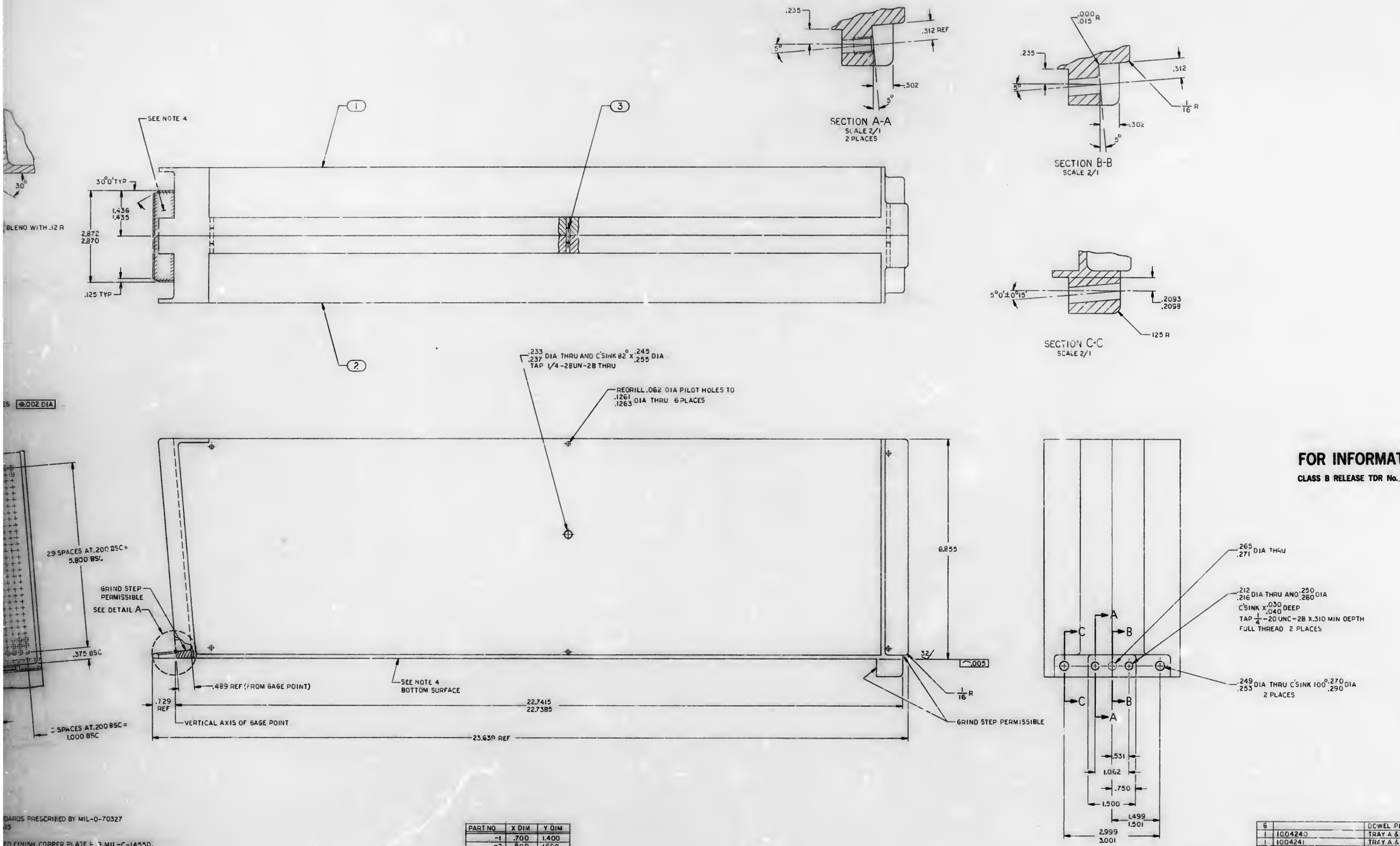
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS ±.005 ANGLES ±0°30'
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

1003157

INCHES

1003157

SYM	REVISIONS DESCRIPTION	DATE	APPROVAL



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02550 **DATE** 8/14/63

DARDS PRESCRIBED BY MIL-D-70327
15

ED FINISH. COPPER PLATE PER MIL-C-14550,
MIL-C-26074A, CLASS I. ALL DIMENSIONS TO,
R PLATING. FINISH MACHINING AFTER PLATING
THICKNESS OF NICKEL PLATE REMAINS
ON PLATED SURFACES TO BE ANODIZED PER
AND PLUG ALL DOWEL HOLES AND THREADED

PART NO	X DIM	Y DIM
-1	.700	1.400
-2	.800	1.600

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
6		DOWEL PIN	3
1	1004240	TRAY A & B RIG	2
1	1004241	TRAY A & B LEFT HAND	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±0°30'
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Ed Pomerne DATE 10 Aug 63
CHECKED
APPROVAL W.S. Tanner 13 Aug 63
APPROVAL
NASA APPROVAL
MIT APPROVAL W.H. Aug 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY A & B
MATCHED MACHINED
VIBRATION MOCKUP

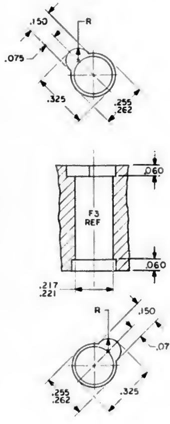
CODE IDENT NO
SIZE J
NASA DRAWING NO 1003157
SCALE 1/1 WT SHEET 1 OF 1

1003157

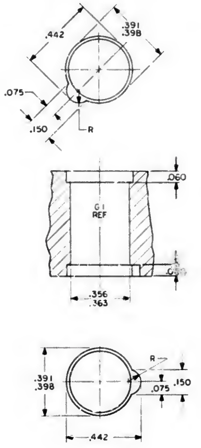
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.000	.000	.006	.108 .112	23
A2	.305	.140			
A3	1.290	.185			
A4	4.020	.200			
A5	4.590	.200			
A6	5.210	.200			
A7	5.780	.200			
A8	6.530	.200			
A9	7.100	.200			
A10	7.720	.200			
A11	8.290	.200			
A12	1.035	.420			
A13	4.235	.470			
A14	4.375	.470			
A15	5.425	.470			
A16	5.565	.470			
A17	6.745	.470			
A18	6.885	.470			
A19	7.935	.470			
A20	8.075	.470			
A21	-.430	.480			
A22	.290	.570			
A23	1.200	.755			
B1	.285	.000	.006	.100 .104	84
B2	.940	.000			
B3	1.430	.000			
B4	3.875	.000			
B5	4.735	.000			
B6	5.065	.000			
B7	5.925	.000			
B8	6.385	.000			
B9	7.245	.000			
B10	7.575	.000			
B11	8.435	.000			
B12	.410	.050			
B13	.770	.060			
B14	1.170	.060			
B15	1.305	.060			
B16	1.040	.100			
B17	1.500	.100			
B18	3.900	.130			
B19	4.710	.130			
B20	5.090	.130			
B21	5.900	.130			
B22	6.410	.130			
B23	7.220	.130			
B24	7.600	.130			
B25	8.410	.130			
B26	.890	.150			
B27	1.155	.200			
B28	.410	.225			
B29	1.445	.225			
B30	.765	.235			
B31	2.150	.270			
B32	.295	.295			
B33	1.550	.305			
B34	4.075	.325			
B35	4.535	.325			
B36	5.265	.325			
B37	5.725	.325			
B38	6.585	.325			
B39	7.045	.325			
B40	7.775	.325			
B41	8.235	.325			
B42	-.430	.350			
B43	1.965	.350			
B44	3.875	.350			
B45	4.735	.350			
B46	5.065	.350			
B47	5.925	.350			
B48	6.385	.350			
B49	7.245	.350			
B50	7.575	.350			
B51	8.435	.350			
B52	.410	.360			
B53	1.655	.390			
B54	-.295	.420			
B55	-.150	.420			
B56	2.080	.420			
B57	3.985	.425			
B58	4.625	.425			
B59	5.175	.425			
B60	5.815	.425			
B61	6.495	.425			
B62	7.135	.425			
B63	7.665	.425			
B64	8.325	.425			
B65	.770	.455			
B66	4.100	.490			
B67	4.510	.490			
B68	5.290	.490			
B69	5.700	.490			
B70	6.610	.490			
B71	7.020	.490			
B72	7.800	.490			
B73	8.210	.490			
B74	.110	.500			
B75	-.220	.550			
B76	1.560	.590			
B77	4.175	.610			
B78	4.435	.610			
B79	5.365	.610			
B80	5.625	.610			
B81	6.685	.610			
B82	6.945	.610			
B83	7.875	.610			
B84	8.135	.610			
B85	-.430	.620	.006	.100 .104	18
B86	.410	.630			
B87	-.305	.680			
B88	4.235	.730			
B89	4.375	.730			
B90	5.425	.730			
B91	5.565	.730			
B92	6.745	.730			
B93	6.885	.730			
B94	7.935	.730			
B95	8.075	.730			
B96	-.430	.755			
B97	-.190	.755			
B98	.350	.755			
B99	.750	.755			
B100	1.075	.755			
B101	1.640	.755			
B102	2.110	.755			
C1	4.035	.035	.006	.168 .172	17
C2	4.575	.035			
C3	4.900	.035			
C4	5.225	.035			
C5	5.765	.035			
C6	6.545	.035			
C7	7.085	.035			
C8	7.410	.035			
C9	7.735	.035			
C10	8.275	.035			
C11	.590	.070			
C12	.145	.080			
C13	.890	.345			
C14	.590	.725			
C15	1.475	.725			
C16	4.900	.725			
C17	7.410	.725			
D1	2.100	.095	.006	.202 .206	7
D2	.590	.280			
D3	4.900	.285			
D4	7.410	.285			
D5	.590	.505			
D6	4.900	.515			
D7	7.410	.515			
E1	1.970	-.015	.006	.059 .062	21
E2	4.440	-.020			
E3	5.630	-.020			
E4	6.950	-.020			
E5	8.140	-.020			
E6	4.990	.155			
E7	7.500	.155			
E8	3.875	.235			
E9	4.735	.235			
E10	5.065	.235			
E11	5.925	.235			
E12	6.385	.235			
E13	7.245	.235			
E14	7.575	.235			
E15	8.435	.235			
E16	1.105	.300			
E17	.220	.450			
E18	-.075	.500			
E19	2.115	.530			
E20	-.330	.555			
E21	.220	.755			
F1	.050	.350	.006	SEE DETAIL A	11
F2	.915	.605			
F3	.050	.645			
F4	3.970	.675			
F5	4.640	.675			
F6	5.160	.675			
F7	5.830	.675			
F8	6.480	.675			
F9	7.150	.675			
F10	7.670	.675			
F11	8.340	.675			
G1	-.230	.145	.006	SEE DETAIL B	5
G2	4.305	.195			
G3	5.495	.195			
G4	6.815	.195			
G5	8.005	.195			
H1	1.775	.145	.006	SEE DETAIL C	2
H2	1.870	.605			
J1	1.310	.465	.006	SEE DETAIL D	1

NOTES:

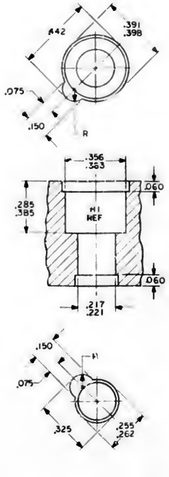
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70[illegible]
2. MAT'L: MAG ALLOY ZK60A-T5 PER QQ-M-31
3. FINISH: ANODIZE PER MIL-M-45202, TYPE I, CLASS C
4. UNLESS OTHERWISE SPECIFIED ALL SURFACES 125
5. INSTALL FIND NO. 2 PER ND1002121
6. REMOVE ALL BURRS AND BREAK SHARP EDGES .005/.015
7. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII TO BE .005/.020



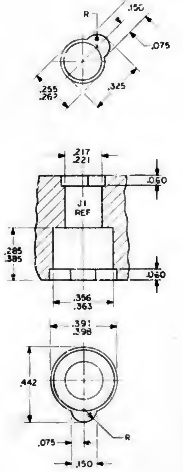
DETAIL A



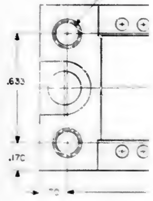
DETAIL B

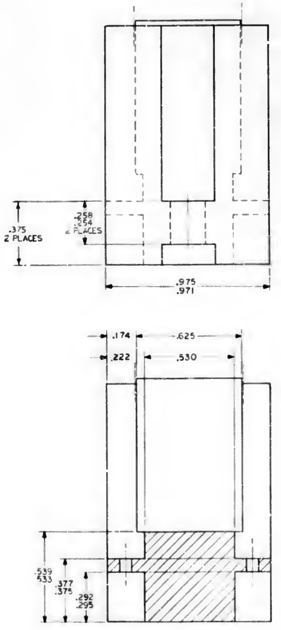


DETAIL C

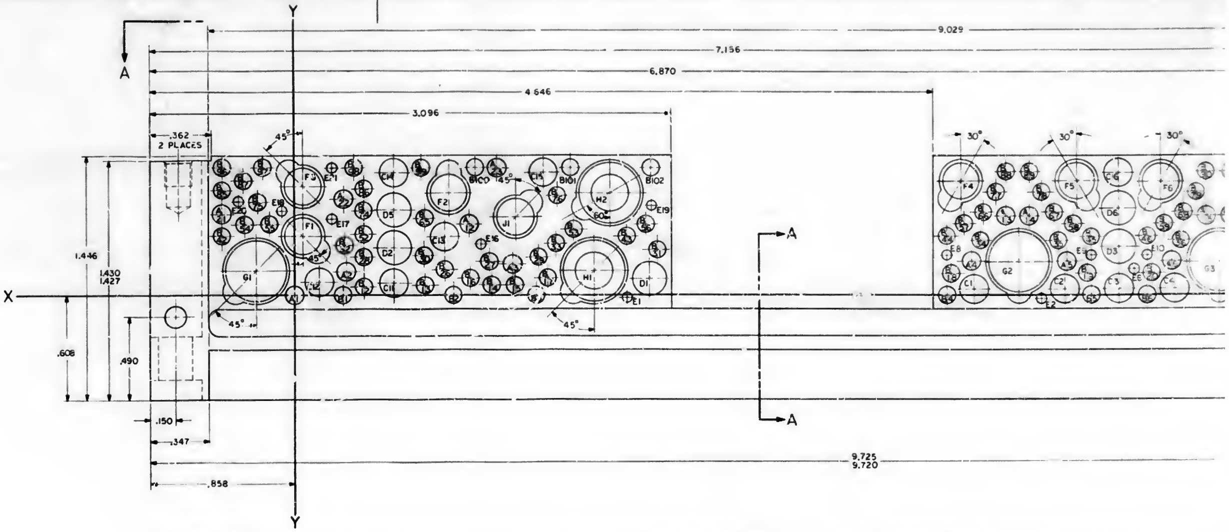


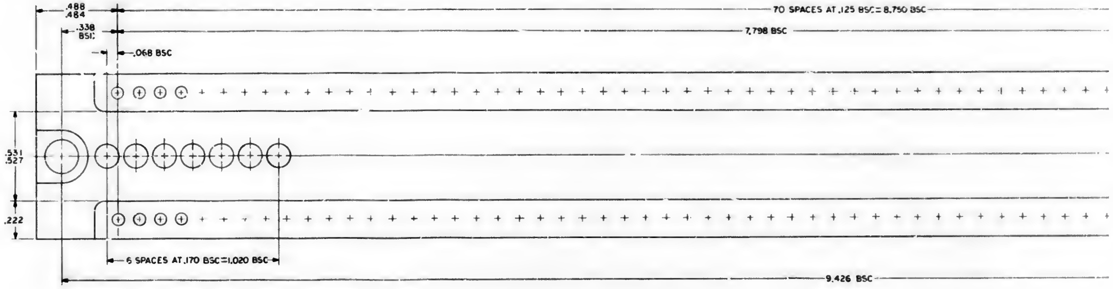
DETAIL D



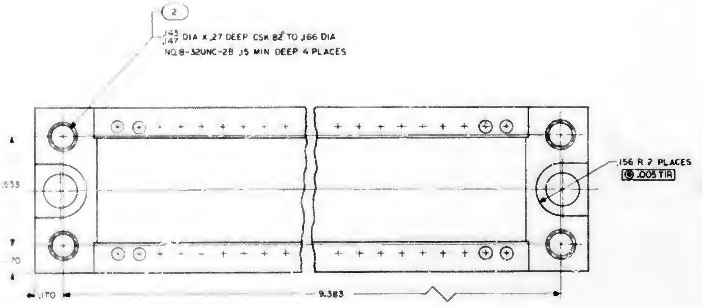


SECTION A-A



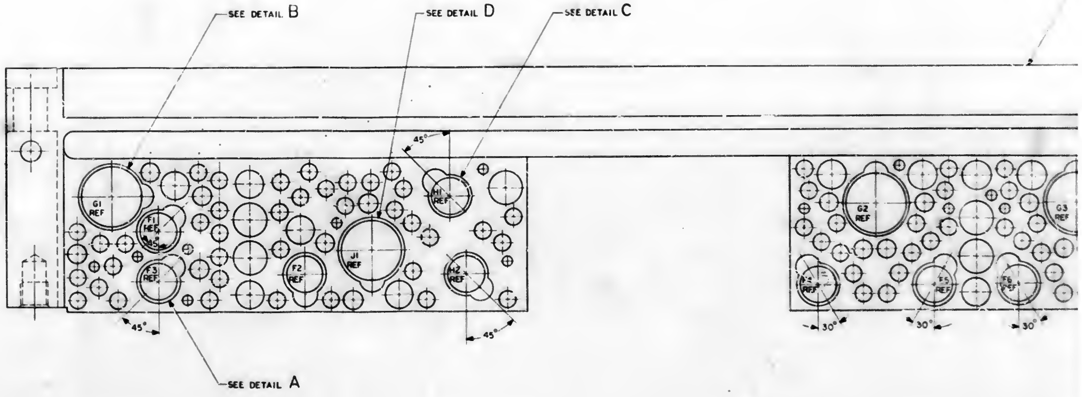


.488
.484
.338
BSC
.068 BSC
70 SPACES AT .125 BSC = 8.750 BSC
7.798 BSC
.531
.527
.222
6 SPACES AT .170 BSC = 1.020 BSC
9.426 BSC



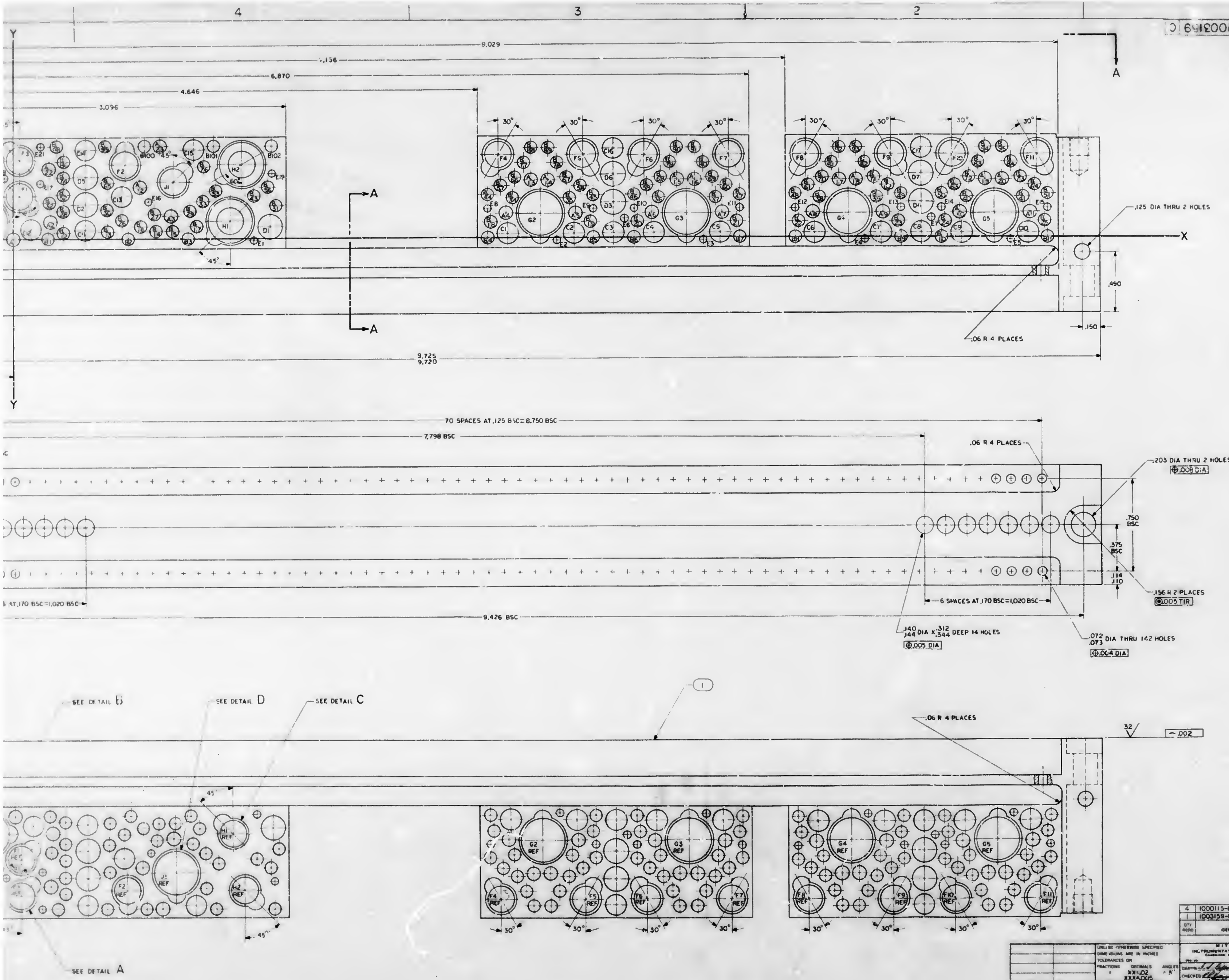
2
.143
.147
DIA X .27 DEEP CSK 82° TO .166 DIA
NO.8-32UNC-2B .15 MIN DEEP 4 PLACES
.156 R 2 PLACES
◎ .005 TIR
.533
.170
.170
9.383

VIEW A-A



1003159 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03645	10-3-63	WR
B	REVISED PER TDRR 04539	10-30-63	WR
C	REVISED PER TDRR 08411 DRAWING CHK	5/7/64	RC



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1000115-1	INSERT THREADED SELF LOCKING	2
1	1003159-1	HEADER HOUSING	1

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±3°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 3

NEXT ASSY	USED ON
1003160	

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER HOUSING
ERASABLE DRIVERS B10&B11 MODULE

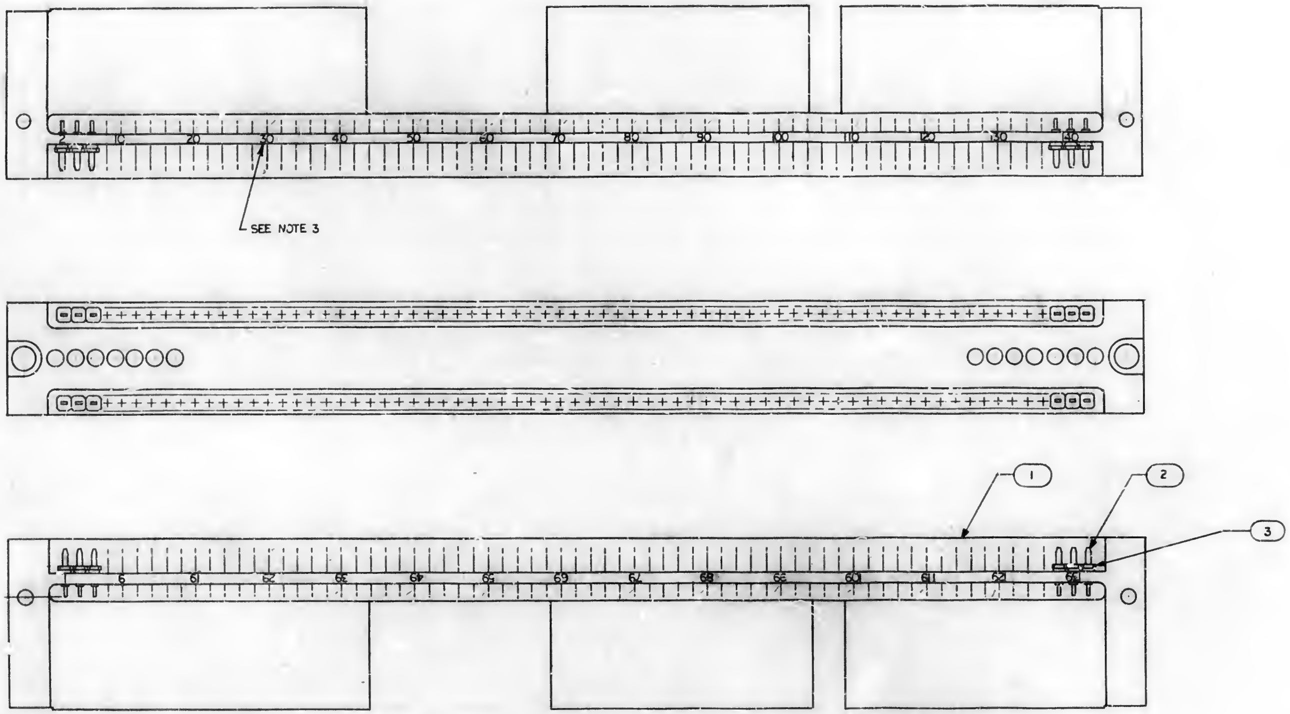
CODE IDENT NO ——— SIZE J NASA DRAWING NO 1003159

SCALE 4/1 WT SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 02836

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04329	10-30-63	WK



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO.2 AND FIND NO.3 PER ND1002136
3. MACK .060/.080 HIGH WHITE PER ND1002019

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
142	1006775	INSULATOR WRAPOST MALE MIN	3
142	1006782-1	CONTACT, WRAPOST MALE MIN	2
1	1003159	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003139	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN S S Gellman DATE 8/15/63
CHECKED July 22 63
APPROVAL
APPROVAL 28 Aug 63
NASA APPROVAL
MIT APPROVAL 8/28/63

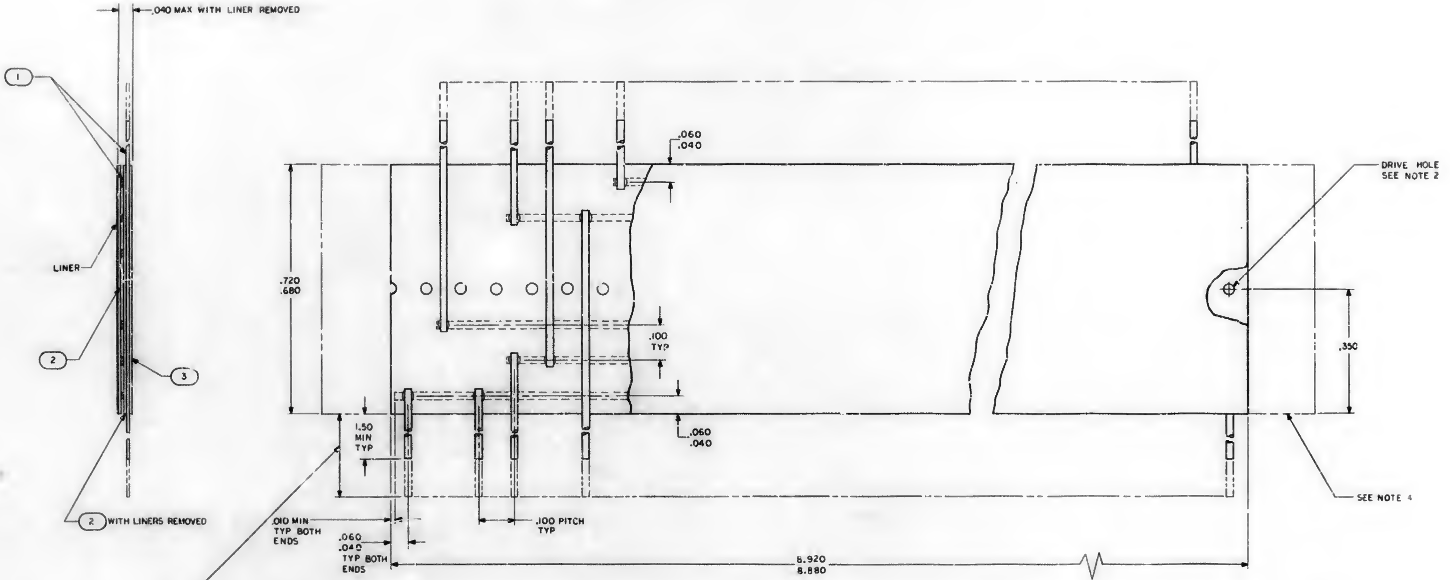
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER ASSEMBLY
ERASABLE DRIVERS B10-1 MODULE

CODE IDENT NO.
SIZE D
NASA DRAWING NO 1003160
SCALE 2/1
WT
SHEET 1 OF 1

MASTER

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS		



ALLOW EXCESS LENGTH FOR STORAGE AND HANDLING LEADS MAY BE HELD TOGETHER BY TAPE OR OTHER METHODS TO BE REMOVED AT NEXT ASSY

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY AND IS TO BE REMOVED AT NEXT ASSY

QTY RFQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006806-8	INSULATION TAPE ELECTRICAL	3
AR	1006806-5	INSULATION TAPE ELECTRICAL	2
AR	1006757-1	WIRE ELECTRICAL .010 X .020	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003139	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

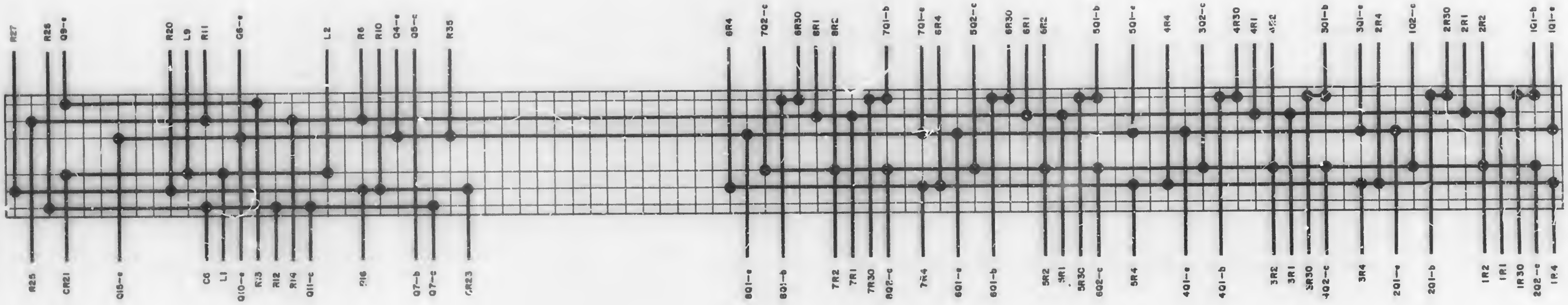
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN
DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSEMBLY
ERASABLE DRIVERS B10 – B11 MODULE

CODE IDENT NO
SIZE E
NASA DRAWING NO 1003161
SCALE 8/1
WT
SHEET 1 OF 2

1003161



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY USED ON
APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSEMBLY
ERASABLE DRIVERS B10 — B11 MODULE

CODE IDENT NO
SIZE E
NASA DRAWING NO 1003161
SCALE 4:1
WT
SHEET 2 OF 2

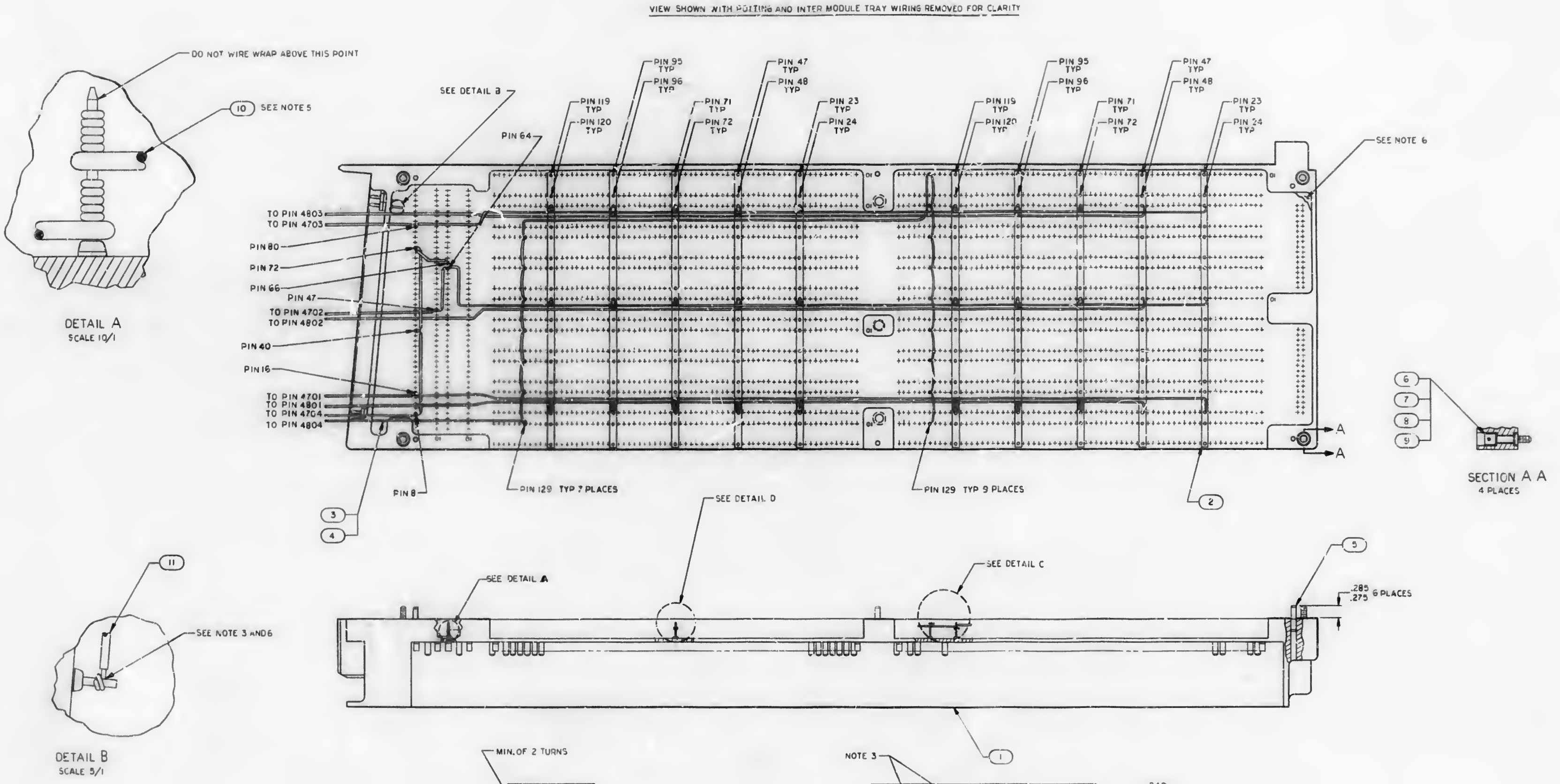
1003161

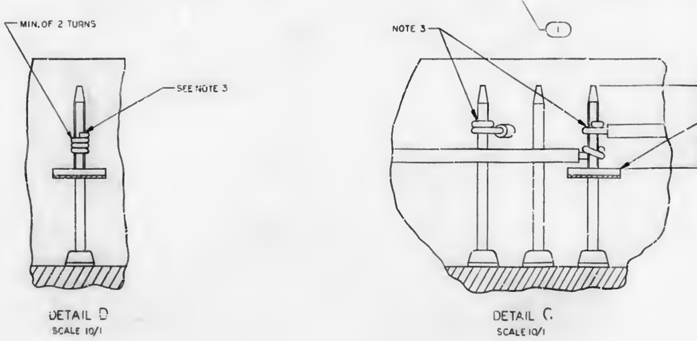
[illegible]

REVISIONS 05798

SYM	DESCRIPTION	DATE	APPROVAL

VIEW SHOWN WITH POTTING AND INTER MODULE TRAY WIRING REMOVED FOR CLARITY





NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED
3. SOLDER PER MIL-S-6872 USING SOLDER PER QQ-S-571 Sn 60
4. DO NOT INSTALL FIND NO. 2 THRU FIND NO. 10 UNTIL WIREWRAPPING IS COMPLETE
5. WIREWRAP PER ND 1002031 AND PER 1006151
6. WIREWRAP PER ND1002031 AND PER 1006156

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006732-2	WIRE, ELEC, INS	11
AR	1006732-1	WIRE, ELEC, INS	10
4	1008145	SPRING PIN	9
8	1004546-1	WASHER, FLAT	8
4	1004257	SCREW EJECTION	7
4	1004256	DRIVE CYLINDER, EJECTION SCREW	6
6	1004249	PIN, STEP	5
AR	QQ-W-343 TYPE S	WIRE, 22 GAUGE, COATED, SOFT	4
AR	1006776-21	INSULATION, SLEEVING ELECTRICAL	3
10	1003195	BUS STRIP ASSEMBLY	2
1	1003136	TRAY A, SUBASSEMBLY, LEFT HAND	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003187	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE 4-22-63
CHECKED [illegible]
APPROVAL
APPROVAL [illegible] 24 Jan 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 21 Jan 64

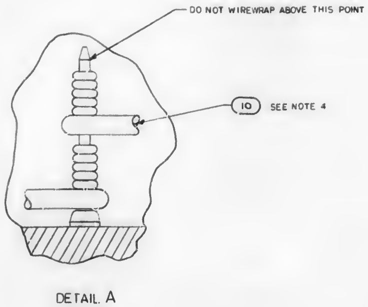
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY A
WIRED ASSEMBLY
LEFT HAND

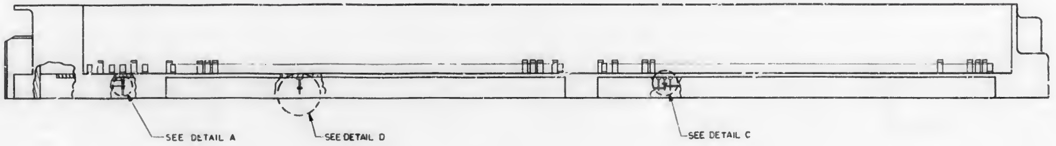
CODE IDENT NO
SIZE E
NASA DRAWING NO 1003163
SCALE 1/1
WT
SHEET 1 OF 1

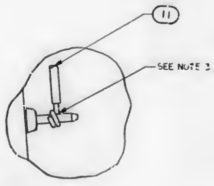
1003163

REVISION 25795			
SYM	DESCRIPTION	DATE	APPROVAL

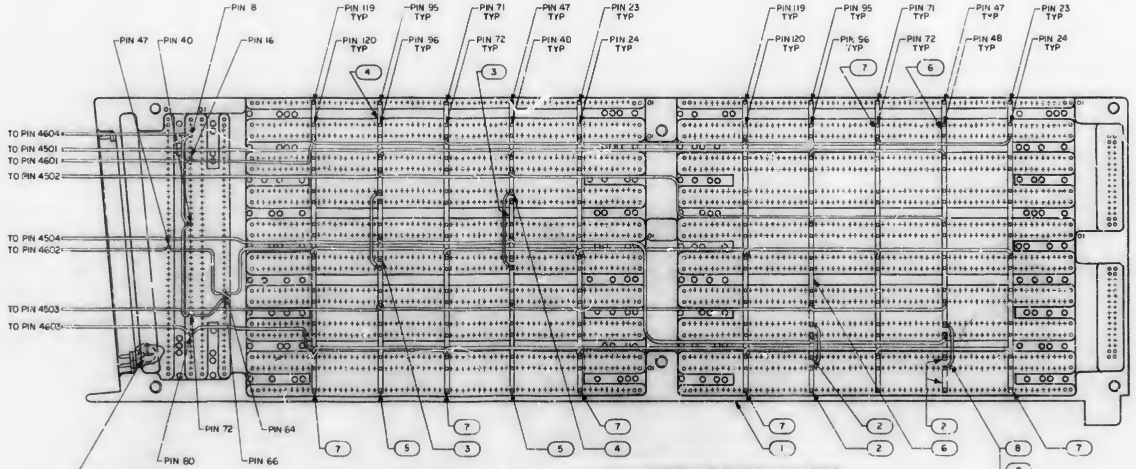


DETAIL A
SCALE 10/1



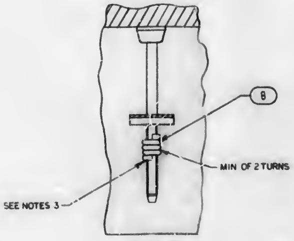


DETAIL B
SCALE 5/1

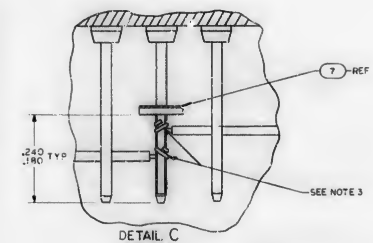


VIEW SHOWN WITH INTERMODULE TRAY WIRING
REMOVED FOR CLARITY

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED
3. SOLDER PER MIL-S-6872 USING SOLDER PER QQ-571 Sn60
4. WIREWRAP PER ND1002031 AND PER 1006152
5. WIREWRAP PER ND1002031 AND PER 1006157



DETAIL D
SCALE 10/1

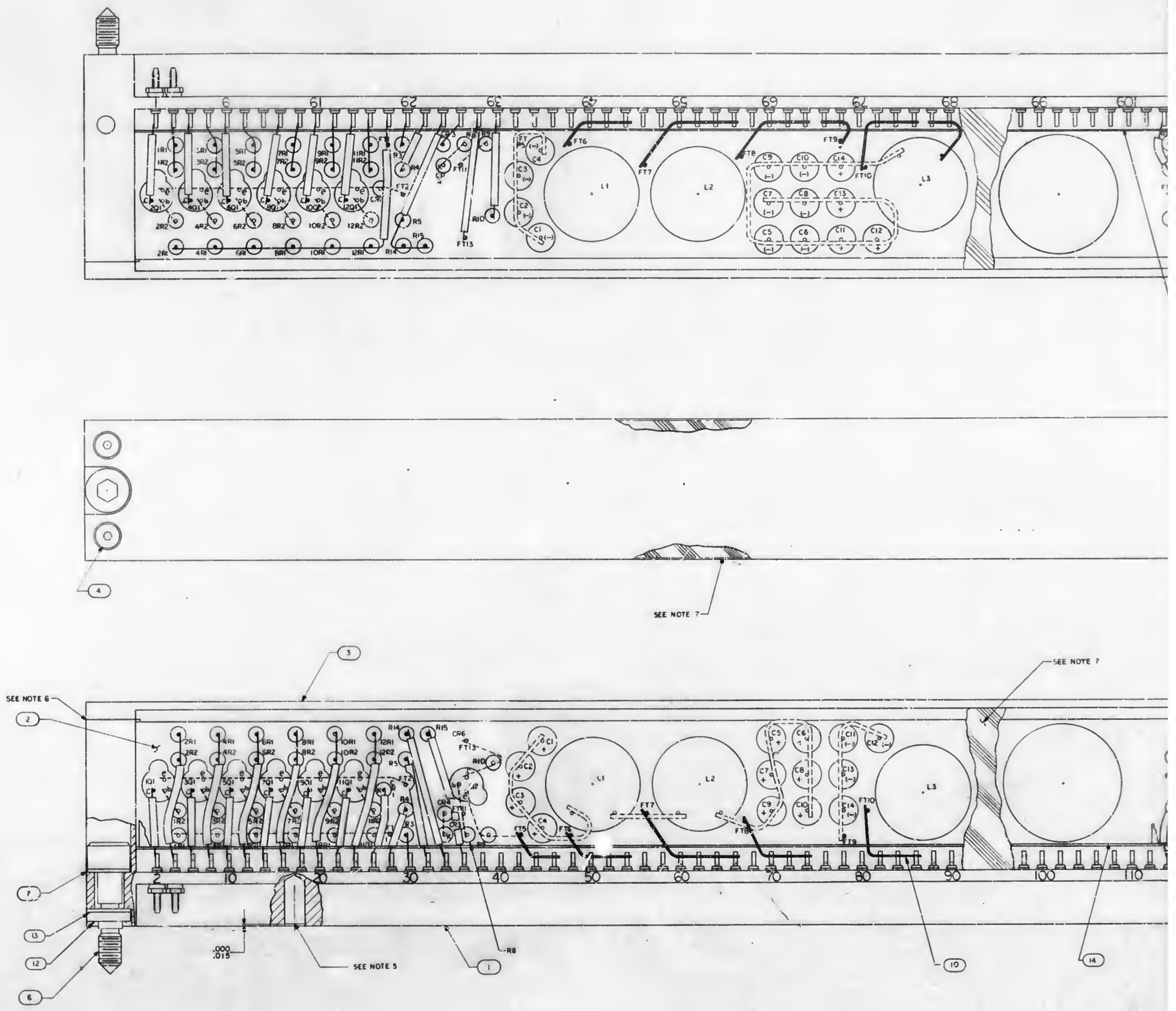


DETAIL C
SCALE 10/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006732-2	WIRE, ELEC INS	11
AR	1006732-1	WIRE, ELEC INS	10
AR	1006776-21	INSULATION SLEEVING, ELECTRICAL	9
AR	QQ-W-343 TYPE S	WIRE, 22 GAGE, COATED, SOFT	8
6	1003195	BUS, STRIP ASSEMBLY	7
2	1003194	BUS, STRIP ASSEMBLY	6
2	1003193	BUS, STRIP ASSEMBLY	5
2	1003192	BUS, STRIP ASSEMBLY	4
2	1003191	BUS, STRIP ASSEMBLY	3
4	1003190	BUS, STRIP ASSEMBLY	2
1	1003137	TRAY A SUBASSEMBLY, RIGHT HAND	1

LIST OF MATERIALS

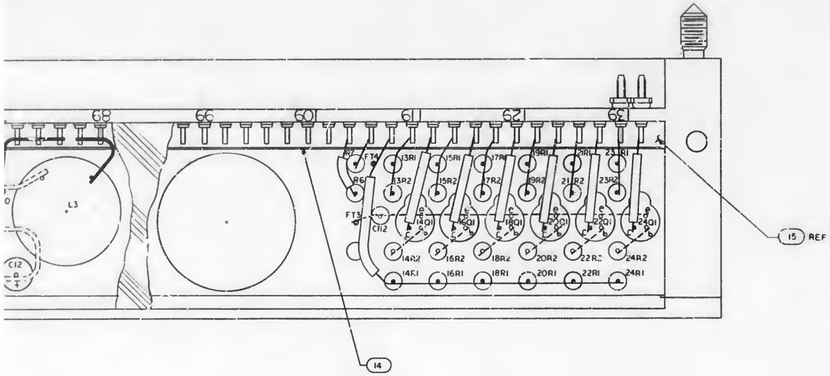
1003200		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES DO NOT SCALE THIS DRAWING	M I T INSTRUMENTATION LAB CAMBRIDGE MASS	MANNED SPACECRAFT CENTER HOUSTON TEXAS
NEXT ASSY	USED ON	MATERIAL	DRAWN DATE CHECKED APPROVAL APPROVAL	TRAY A WIRED ASSEMBLY RIGHT HAND
APPLICATION		HEAT TREATMENT	NASA APPROVAL	CODE IDENT NO. SIZE E NASA DRAWING NO 1003164
		FINAL FINISH	MIT APPROVAL	SCALE 1/1 WT SHEET 1 OF 1

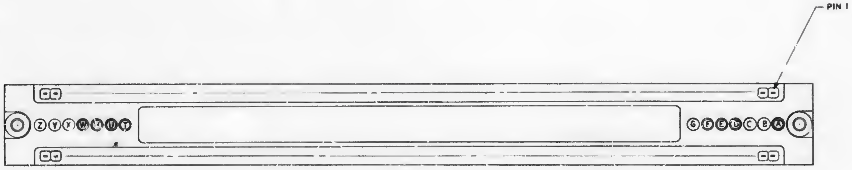


NOTES

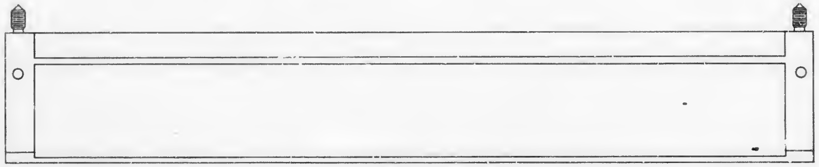
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
4. MARK .250 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
5. FILL KEYING HOLES MARKED A,D,E,F,T,U,V,W USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183
6. APPLY FIND NO.11 TO INTERFACE PRIOR TO ASSEMBLY
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) IN INDICATED AREA ONLY
8. BOND FIND NO. 2 TO FIND NO.1 USING FIND NO. 14
9. * DENOTES AS REQUIRED
10. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
11. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

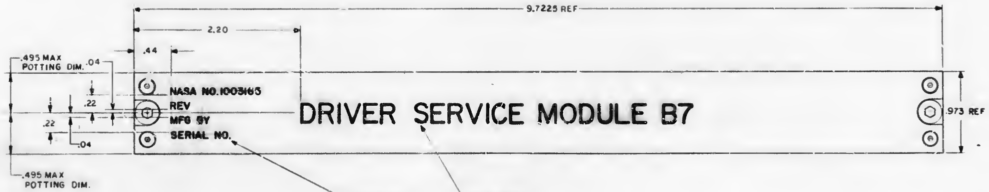
1003165	J



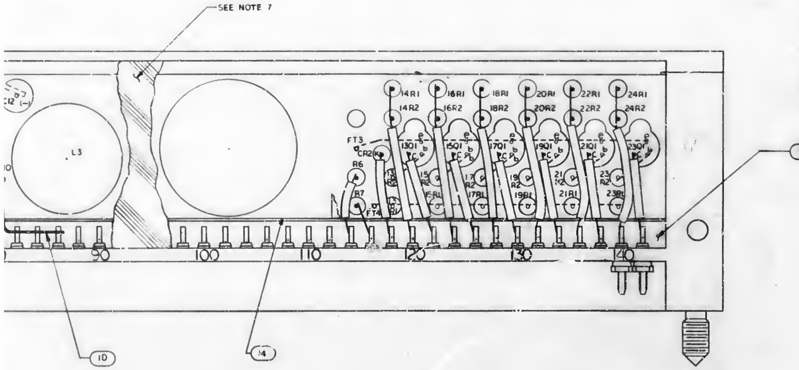


VIEW FOR KEY LOCATION
SEE NOTE 5





MARKING VIEW
SCALE: 2/1



SYM	DESCRIPTION	DATE	APPROVED
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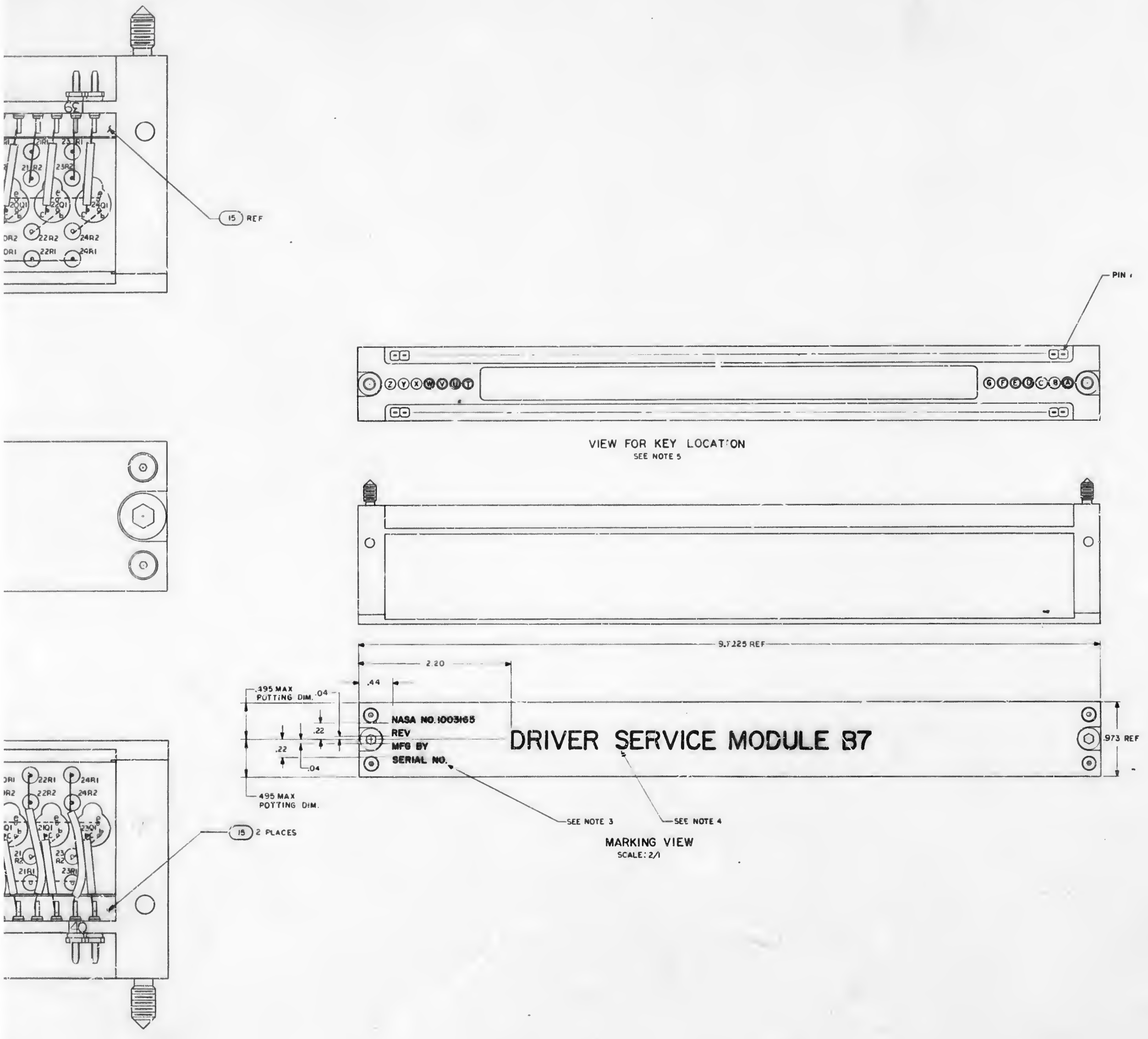
B	REVISED PER TDRR 063 5	[illegible]	[illegible]
C	REVISED PER TDRR [illegible]	[illegible]	[illegible]
D	REVISED PER TDRR 05186	[illegible]	[illegible]
E	REVISED PER TDPR 05705	[illegible]	[illegible]
F	REVISED PER TDRR 07263 DR [illegible] CHK [illegible]	[illegible]	[illegible]
G	REVISED PER TDRR 11243 DR [illegible] CHK [illegible] RTM	[illegible]	[illegible]
H	REVISED PER TDRR 12316 DR [illegible] CHK [illegible] RTM	9/28/[illegible]	[illegible]
J	REVISED PER TDRR 13080 DR [illegible] CHK [illegible] RTM	[illegible]	[illegible]



VIEW FOR KEY LOCATION
SEE NOTE 5

MARKING VIEW
SCALE: 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
		SCHEMATIC	REF
AR	1006826-12	INSULATION TAPE, ELECTRIAL	15
AR	1006806-4	TAPE, ELECTRIC	14
2	1004546-3	WASHER, FLAT	13
2	MS 16633-4015	RING, RETAINING, EXTERNAL "E"	12
AR	1006879	SILICONE COMPOUND, THERMOCONDUCTIVE	11
AR	1006757-11	WIRE, ELEC	10
~~8~~	~~1004117~~	~~PLUG, KEYING~~	~~9~~
~~2~~	~~1005148~~	~~PIN, SPRING~~	~~8~~
2	1004546-1	WASHER, FLAT	7
2	1004579-1	SCREW, JACKING	6
~~2~~	~~1004307~~	~~DRIVE CYLINDER~~	~~5~~
4	1006273-11	SCREW, CAP, BUTTON HEAD	4
1	1003112	COVER	3
1	1003173	DRIVER SERVICE MODULE SUB ASSY	2
1	1003128	HEADER HOUSING ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003184	1003400

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

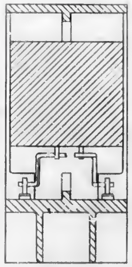
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRIVER SERVICE MODULE B7
ASSEMBLY

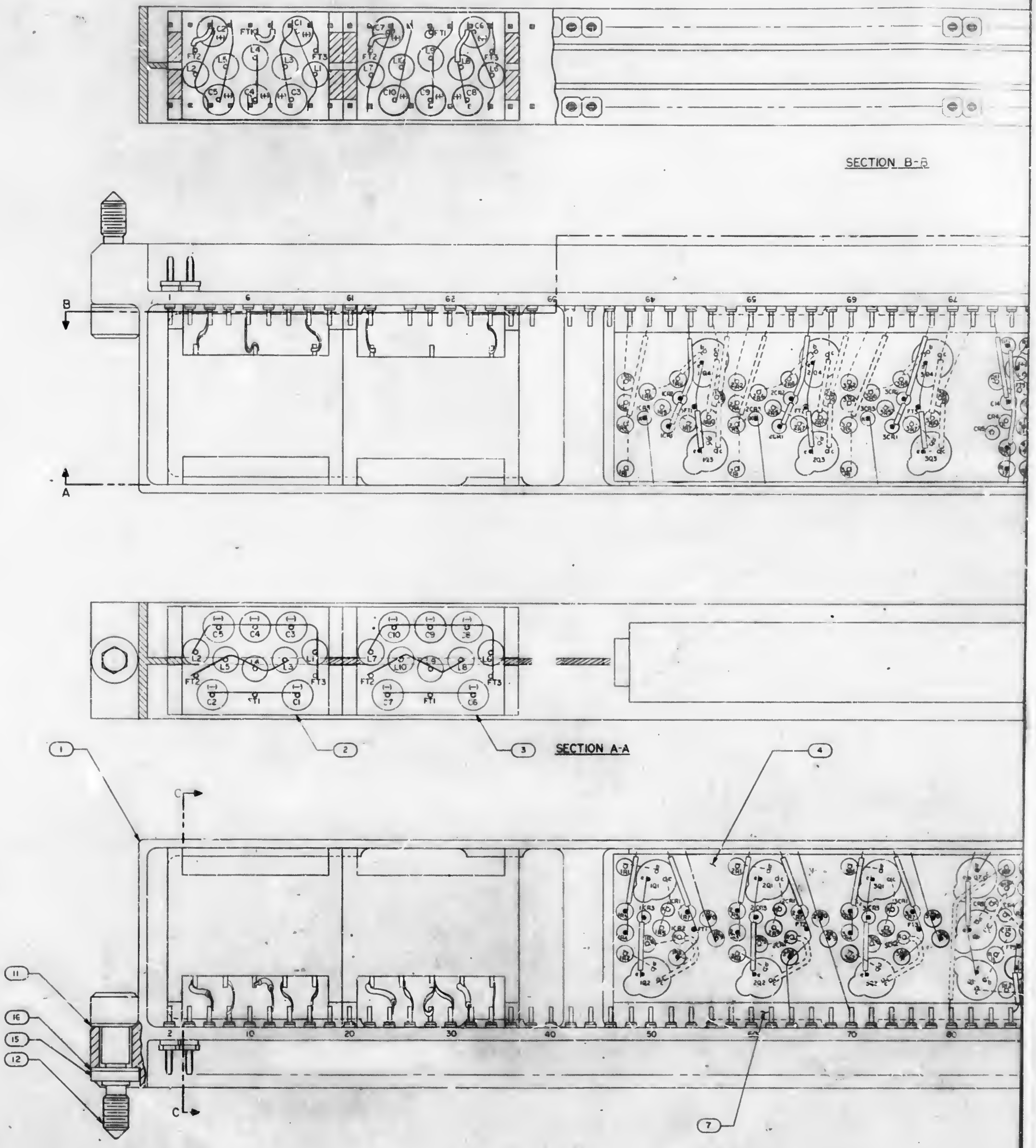
CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003165
SCALE 4/1
WT
SHEET 1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
4. MARK .250 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 1
5. ENCAPSULATE MODULE PER ND1002002 BLACK POLYURETHANE FOAM IN INDICATED AREAS ONLY
6. BOND FIND NO. 2, 3, 5 TO FIND NO. 1 PER ND1002004
7. BOND FIND NO. 7 TO FIND NOS. 1 AND 4 PER ND1002004
8. FILL KEYING HOLES MARKED A,E,G,H,U,W,X,Y USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND 1002183
9. BOND FIND NO. 8 TO FIND NO. 5 AND FIND NO. 1 PER ND 1002004
10. BOND FIND NO. 17 TO FIND NO. 18 AND FIND NO. 1 PER ND 1002004
11. ~~DIM. A TO BE EQUAL TO DIM. B [illegible]~~



SECTION C-C



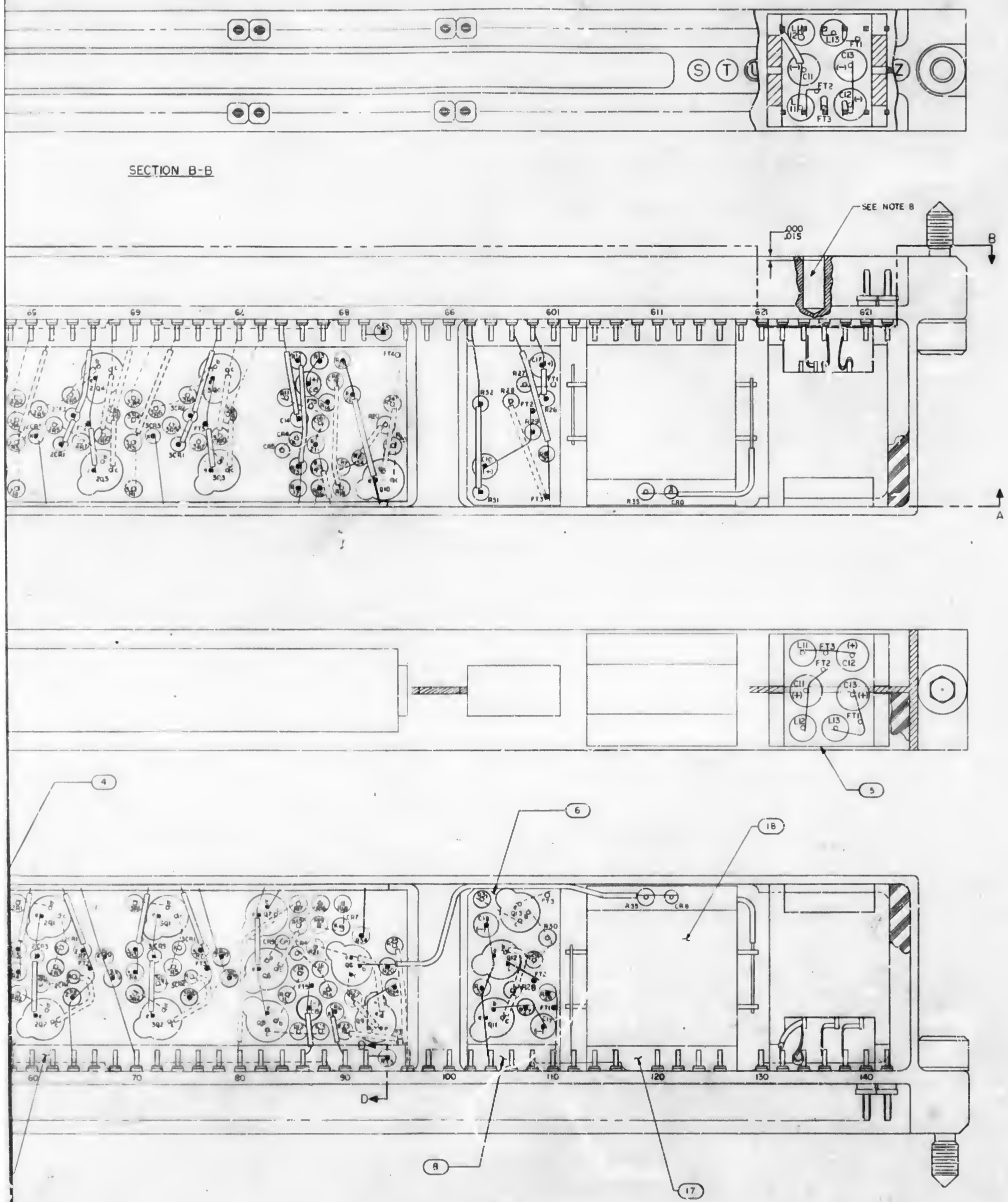
SECTION B-B

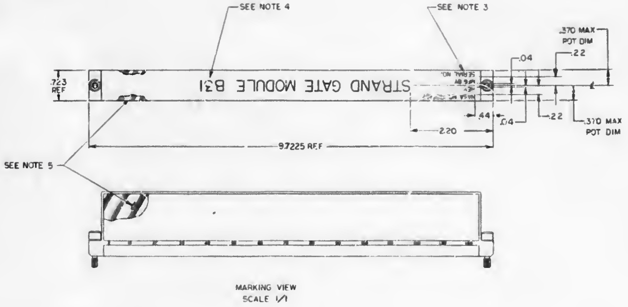
SECTION A-A

J	1003167

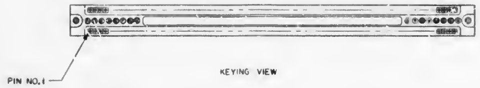
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04474		
B	REVISED PER TDRR 04725		
C	REVISED PER TDRR 05106		
D	REVISED PER TDRR 06140		
E	REVISED PER TDRR 07065 DR [illegible] CHK [illegible]		
F	REVISED PER TDRR 07670 DR [illegible] CHK [illegible]	4/23/[illegible]	
G	INACTIVE PER TDRR 10611 DR P. [illegible] CHK [illegible]		
H	REVISED PER TDRR 11243 DR [illegible] CHK [illegible]		
J	REVISED PER TDRR 13117 DR [illegible] CHK [illegible]		

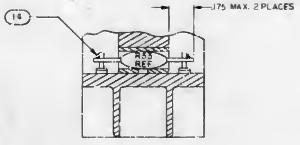




MARKING VIEW
SCALE 1/1



KEYING VIEW



SECTION D-D

Ⓖ INACTIVE AFTER SYSTEM NO. 20
FOR NEW PROCUREMENT USE 1003470

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1006148	SCHEMATIC	REF
1	1003206	STRAND GATE MODULE SUB-ASSY 6	18
1	1004282	BLOCK, SPACER	17
2	1004546-3	WASHER, FLAT	16
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	15
AR	1006757-1	WIRE, ELECTRICAL .010 X.020	14
~~8~~	~~1004117~~	~~PLUG, KEYING~~	~~13~~
2	1004579-1	SCREW, JACKING	12
2	1004546-1	WASHER, FLAT	11
~~2~~	~~[illegible]~~	~~PIN, SPRING~~	~~10~~
~~2~~	~~1004207~~	~~[illegible]~~	~~9~~
1	1004279	BLOCK SPACER	8
1	1003182	STRAND GATE BLOCK SPACER SUB ASSY	7
1	1003183	STRAND GATE MODULE SUB-ASSY 5	6
1	1003172	STRAND GATE MODULE SUB-ASSY 4	5
1	1003166	STRAND GATE MODULE SUB-ASSY 3	4
1	1003171	STRAND GATE MODULE SUB-ASSY 2	3
1	1003162	STRAND GATE MODULE SUB-ASSY 1	2
1	1003175	HEADER HOUSING ASSY	1

LIST OF MATERIALS

1003184	1003186
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCE
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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INSTRUMENTATION LAB
CAMBRIDGE MASS
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APPROVAL
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

STRAND GATE
MODULE ASSY B31

SIZE J
NASA DRAWING NO. 1003167
SCALE 4/1
WT
SHEET

J
1003167
A
B
C
D
1
2
3
4

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS 0415

ZONE	SYM	DESCRIPTION	DATE	APPROVAL
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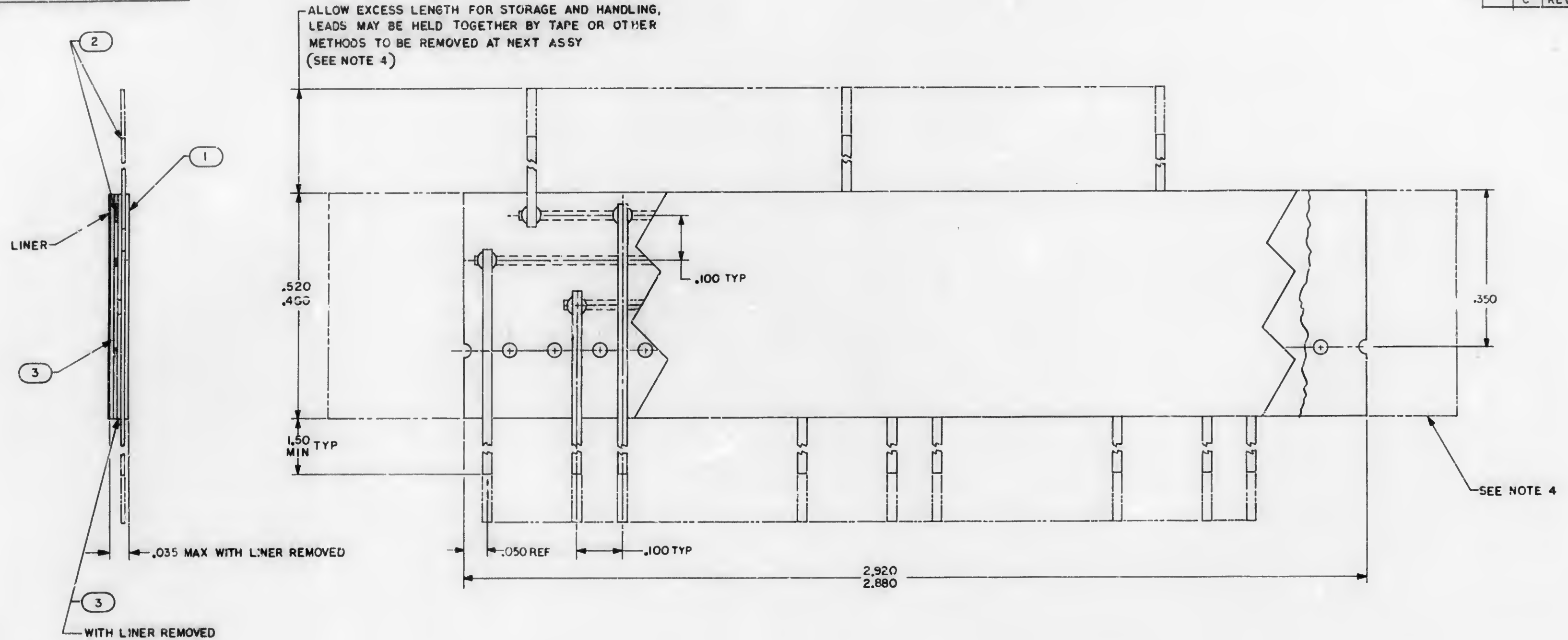
	B	REVISED PER TDRR 05040	12-10-63	
	C	REVISED PER TDRR 06148		



ALLOW EXCESS LENGTH FOR STORAGE AND HANDLING, LEADS MAY BE HELD TOGETHER BY TAPE OR OTHER METHODS TO BE REMOVED AT NEXT ASSY (SEE NOTE 4)
2
1
LINER
3
.035 MAX WITH LINER REMOVED
3
WITH LINER REMOVED
.520
.460
.100 TYP
.350
1.50 MIN TYP
SEE NOTE 4
.050 REF
.100 TYP
2.920
2.880

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND 1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY AND IS TO BE REMOVED AT NEXT ASSEMBLY

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
A R	1006806 -13	INSULATION TAPE, ELECTRICAL	3
A R	1006757-1	WIRE, ELECTRICAL .010 X.020	2
A R	1006806 -7	INSULATION TAPE, ELECTRICAL	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003166	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG NO CONTRACT
DRAWN DATE SEPT 5 63
CHECKED
APPROVAL 30 OCT 63
APPROVAL
NASA APPROVAL
MIT APPROVAL 24 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
STRAND GATE MODULE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO 1003168
SCALE NONE
SHEET 1 OF 2

1003168 B

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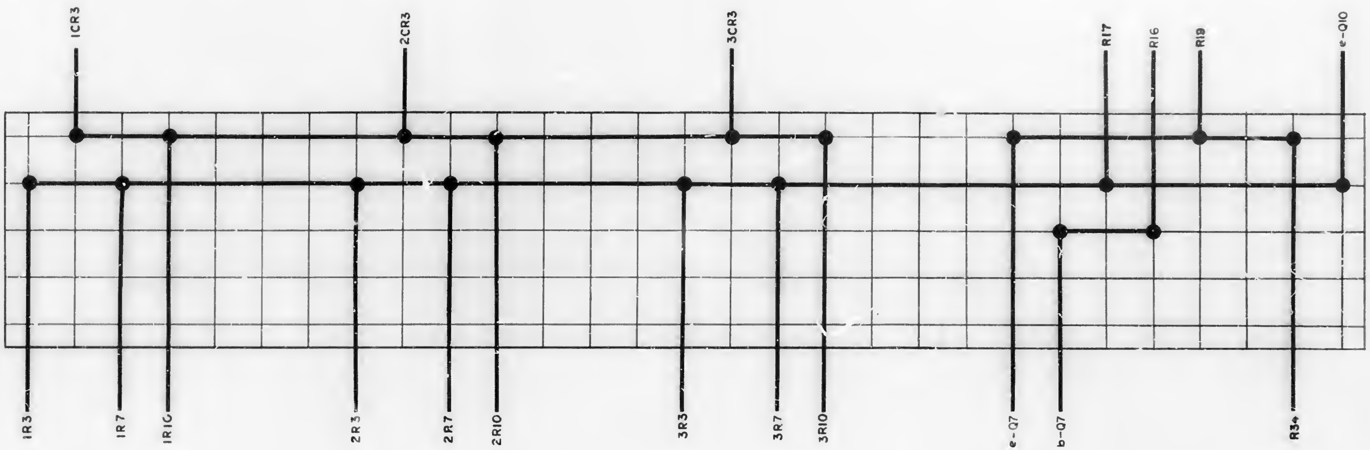
REVISIONS 04147

ZONE	SYM	DESCRIPTION	DATE	APPROVAL
	A	REVISED PER TDRR 04736		
	B	REVISED PER TDRR 05010	12-10-63	
	C	REVISED PER TDRR 06143		



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
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CAMBRIDGE, MASS
DRAWN DATE SEPT5 63
CHECKED
APPROVAL 23OCT63
APPROVAL
NASA APPROVAL 10/24/63
MIT APPROVAL 24 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

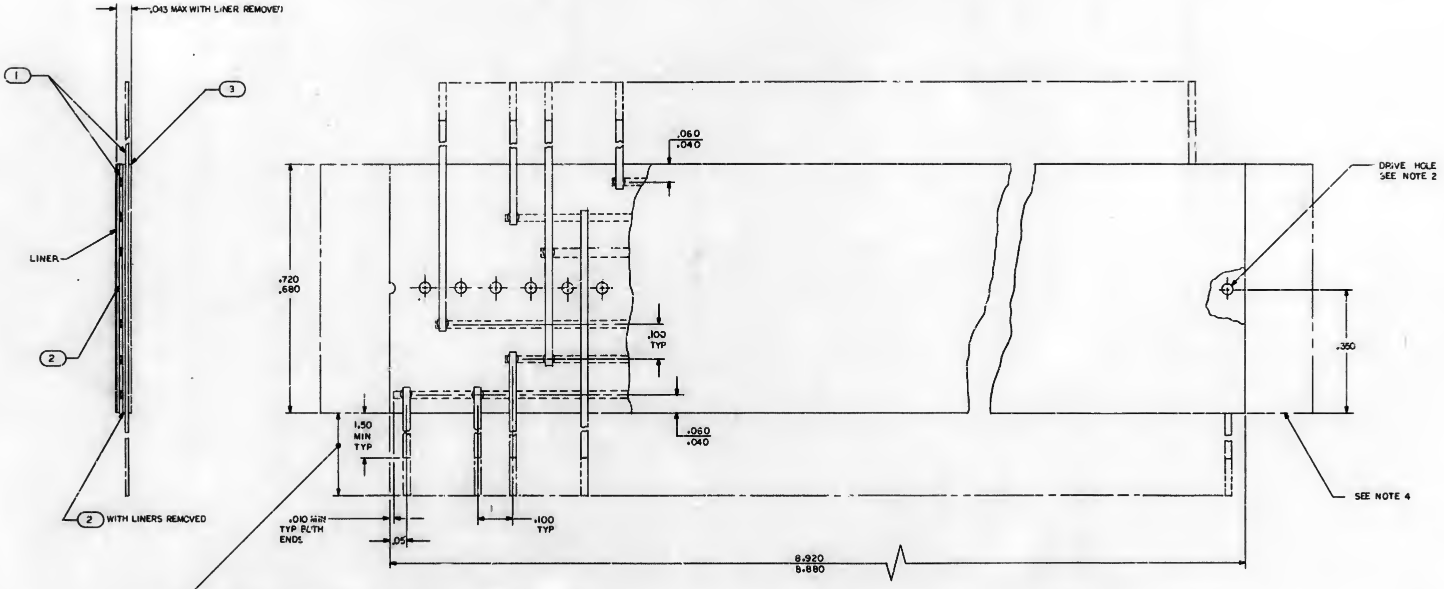
MATRIX ASSY
STRAND GATE MODULE

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003168
SCALE NONE
WT
SHEET 2 OF 2

[illegible]

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER YDRR 04156	10-24-63	WK

REVISIONS 03649



ALLOW EXCESS LENGTH FOR STORAGE AND HANDLING
LEADS MAY BE HELD TOGETHER BY TAPE OR
OTHER METHODS TO BE REMOVED AT NEXT ASSY

NOTES:-

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FABRICATE PER ND1002030
3. AR DENOTES AS REQUIRED
4. INDICATED MATERIAL IS USED FOR HANDLING PURPOSES ONLY AND IS TO BE REMOVED AT NEXT ASSY

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006806-15	INSULATION TAPE ELECTRICAL	3
AR	1006806-14	INSULATION TAPE ELECTRICAL	2
AR	10[illegible]757-1	WIRE ELECTRICAL .010 X .020	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
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DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible] 10-3-63
MIT APPROVAL [illegible] 3 Oct 63

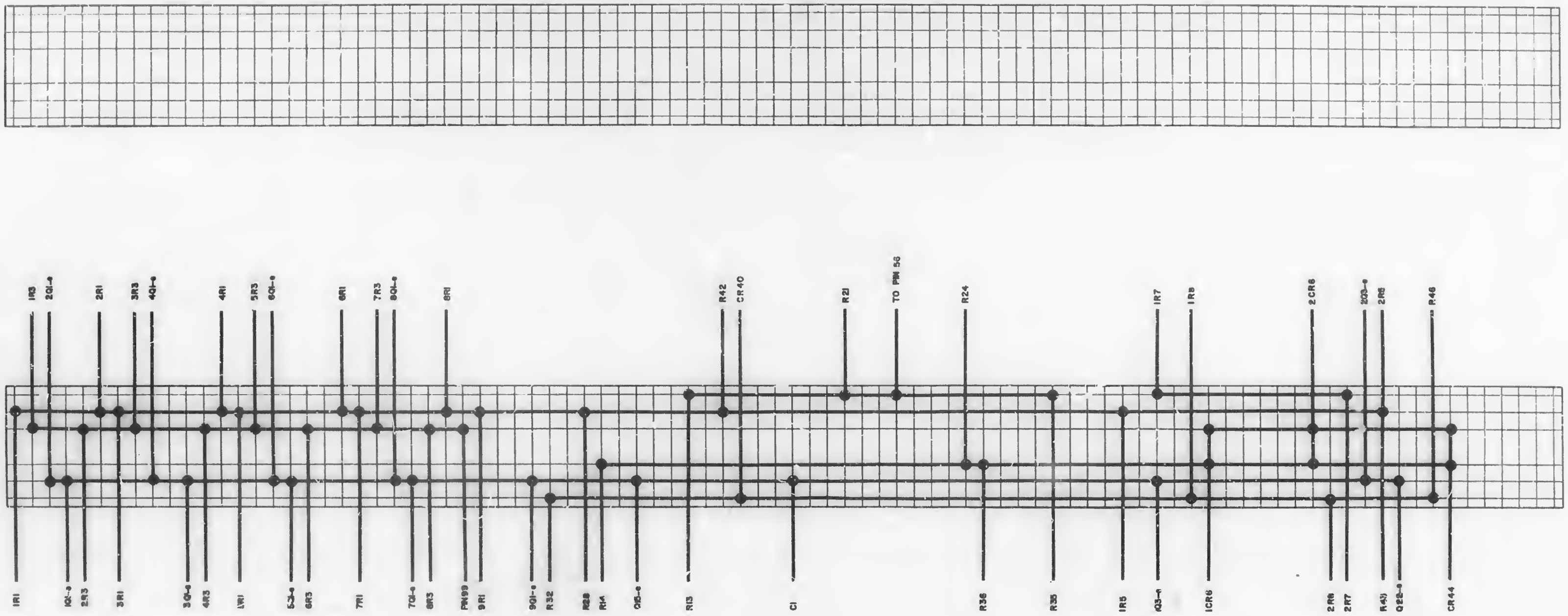
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
ROPE DRIVER MODULE

CODE IDENT NO. —
SIZE E
NASA DRAWING NO. 1003169
SCALE 8/1
WT
SHEET 1 OF 1

MASTER

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04156		



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES

DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

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APPROVAL

NASA APPROVAL
10-2-67

MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MATRIX ASSY
ROPE DRIVER MODULE

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003169
SCALE 4:1
WT
SHEET 2 OF 2

1003169 A

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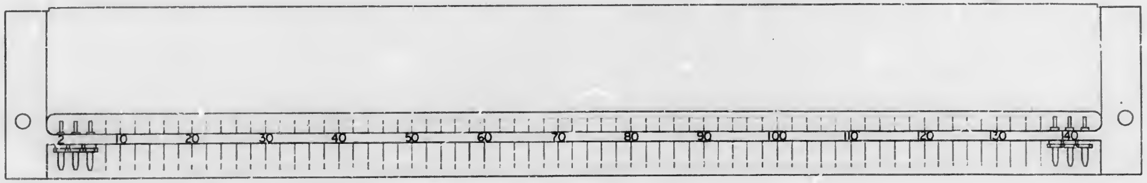
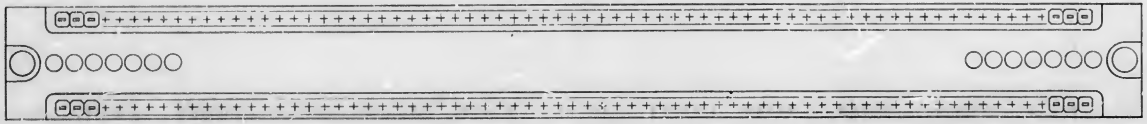
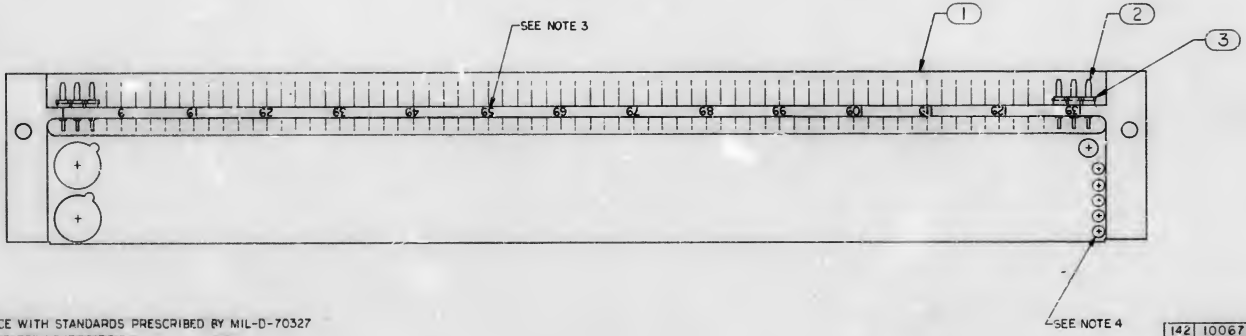
REVISIONS 03649			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04383	5 OCT 63	







NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO.2 AND FIND NO.3 PER ND 1002136
3. MARK .080/.060 HIGH WHITE PER ND 1002019
4. PARTIAL HOLE PATTERN SHOWN FOR ORIENTATION ONLY

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
142	1006775	INSULATOR, WRAPOST MALE MIN	3
142	1006782-1	CONTACT, WRAPOST MALE MIN	2
1	1003179	HEADER HOUSING	1

LIST OF MATERIAL

NEXT ASSY	USED ON
1003178	

APPLICATION

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TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
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MATERIAL
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FINAL FINISH

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CAMBRIDGE, MASS.
DWG NO.
CONTRACT

DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 10-3-63
MIT APPROVAL 3 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER HOUSING ASSEMBLY
ROPE DRIVER
MODULE

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003170
SCALE 2/1
WT
SHEET 1 OF 1

1003170 A

MASTER

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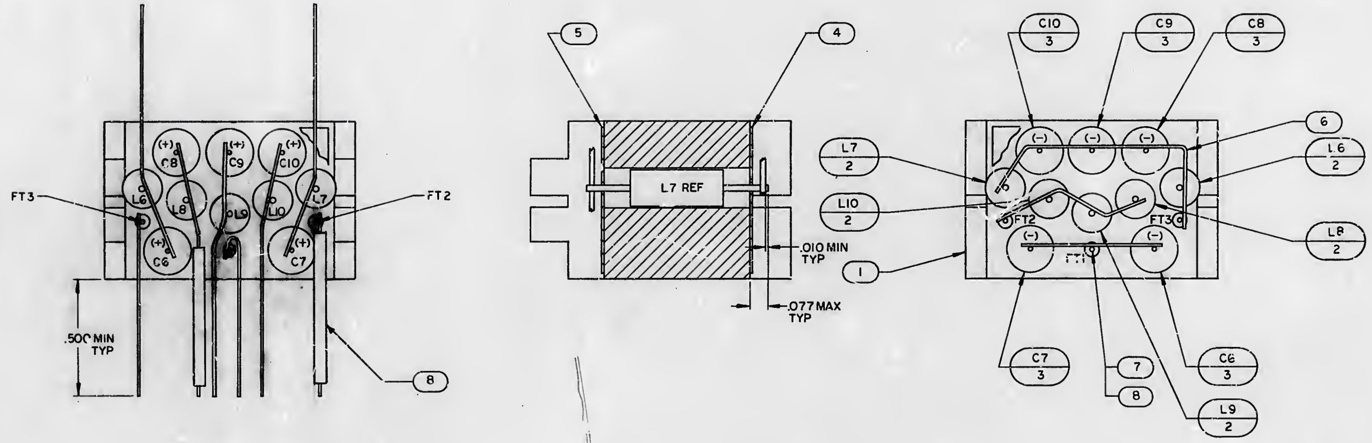
REVISIONS 04147

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05045	DEC 63	EBK
B	REVISED PER TDRR 06144	FEB 64	EBK



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. AR DENOTES AS REQUIRED
4. STAKE ALL COMPONENTS PER ND1002009
5. ON FIND NO.4 AND FIND NO.5 WIRING IS SHOWN WITH UNSLEEVED WIRE SOLID AND SLEEVED WIRE SHOWN DASHED
6. FT DENOTES FEED THRU

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006776-22	INSULATION SLEEVING	8
AR	1006757-8	WIRE, ELEC	7
AR	1006757-1	WIRE, ELEC .010×.020	6
1	1004266-2	INSULATOR	5
1	1004266-1	INSULATOR	4
5	1006755-79	CAPACITOR, TANT	3
5	1010406-7	COIL, RF, CHOKE	2
1	1004255	HOLDER COMPONENT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003167	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
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CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN C.A. DATE 9-5-63
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APPROVAL 23 Oct 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

STRAND GATE MODULE
SUBASSEMBLY 2

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003171
SCALE 4/1
WT
SHEET 1 OF 1

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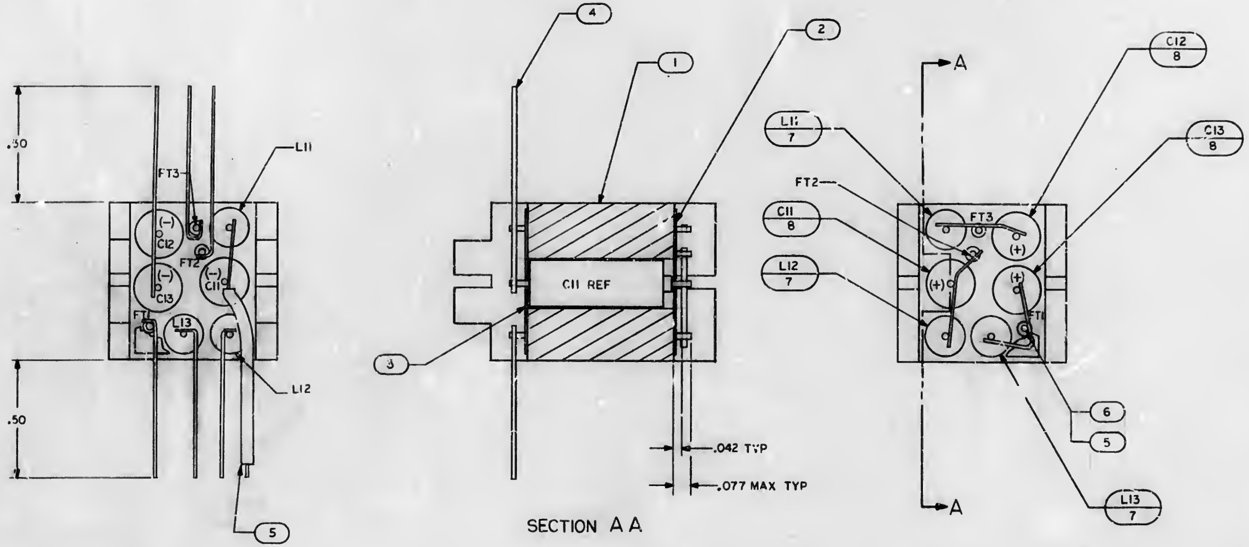
REVISIONS 09147

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 0430	3/11/64	



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. FT DENOTES FEED THRU
4. STAKE ALL COMPONENTS PER ND1002009
5. AR DENOTES AS REQUIRED
6. ON FIND NO.2 AND FIND NO.3 WIRING IS SHOWN WITH UNSLEEVED WIRE SOLID AND SLEEVED WIRE SHOWN DASHED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	1006755-79	CAPACITOR	8
3	1010406-7	COIL	7
AR	1006757-8	WIRE, ELEC .020 DIA	6
AR	1006776-22	INSULATION SLEEVING	5
AR	1006757-1	WIRE, ELEC .010 X .020	4
1	1004267-2	INSULATOR	3
1	1004267-1	INSULATOR	2
1	1004253	HOLDER, COMPONENT	1

LIST OF MATERIALS

1003167	
NEXT ASSY	USED ON

APPLICATION

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DIMENSIONS ARE IN INCHES
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FRACTIONS ± DECIMALS ±.03 ANGLES ±
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MATERIAL
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DRAWN W. Horgan DATE 9-4-63
CHECKED [illegible] 22 Oct 63
APPROVAL W. [illegible] 20 Oct 63
APPROVAL
NASA APPROVAL
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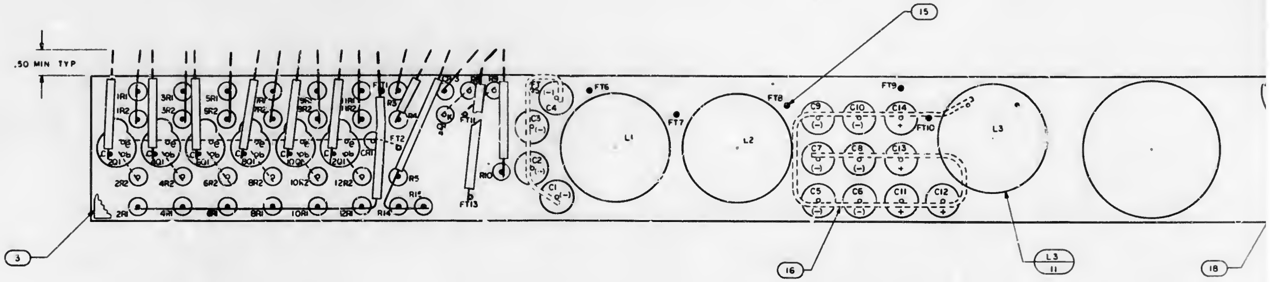
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

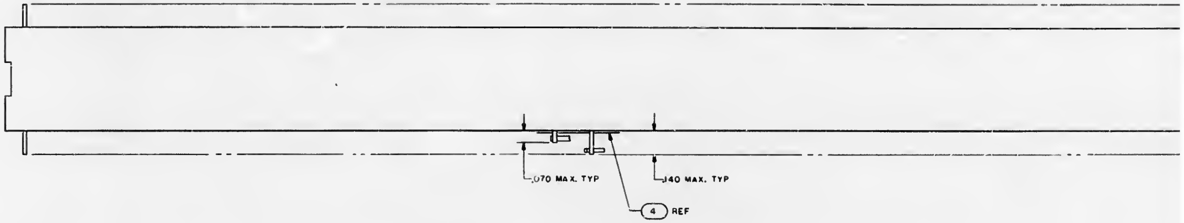
STRAND GATE MODULE
SUBASSEMBLY 4

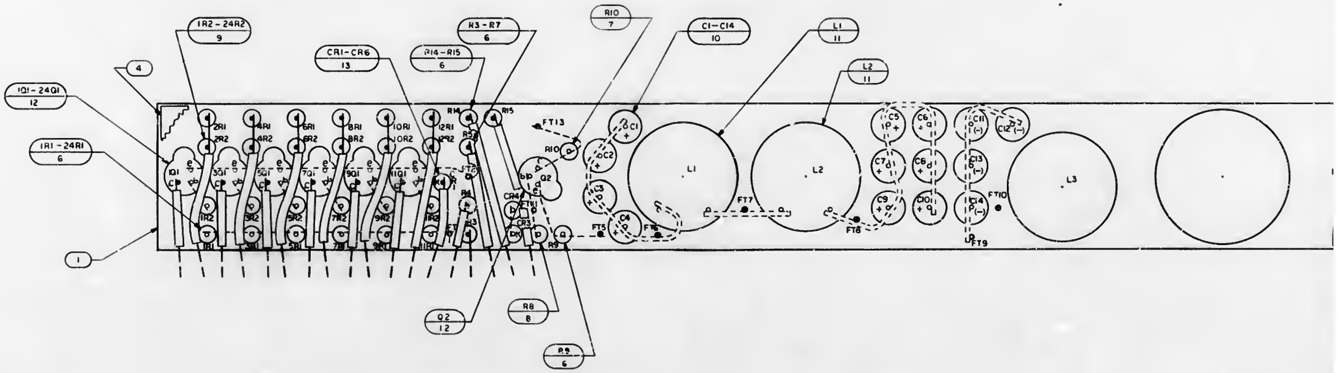
CODE IDENT NO. ——— SIZE D NASA DRAWING NO. 1003172

SCALE 4:1 WT SHEET 1 OF 1

1003172 A





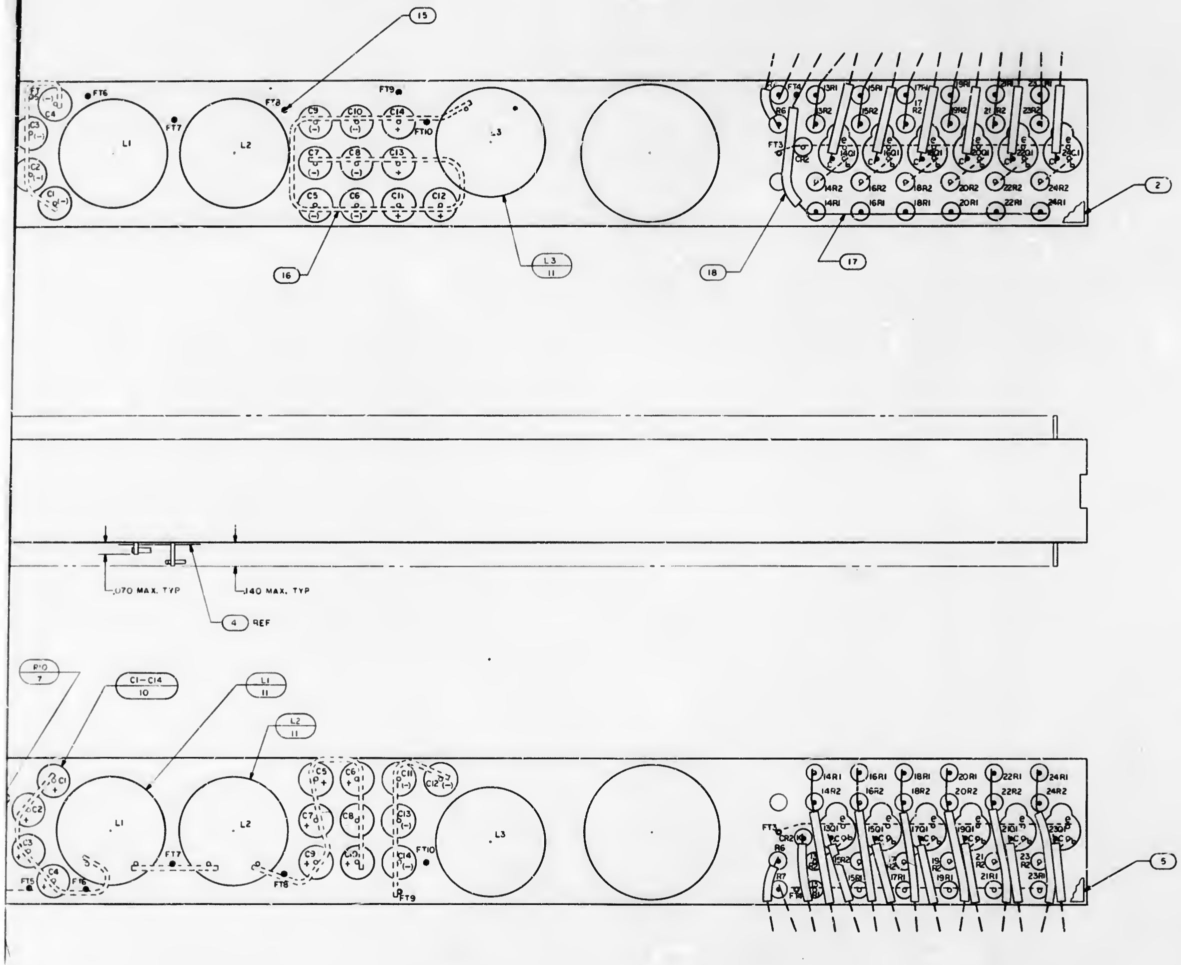


NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER N01002005
3. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
4. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. STAKE ALL COMPONENTS PER N01002009
6. DASHED LINES INDICATE FIRST LEVEL WIRING AND SOLID LINES INDICATE SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. FT DENOTES FEED THRU
9. AR DENOTES AS REQUIRED

1003173 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 0V52C	9-16-63	
B	REVISED PER TDRR 05180		
C	REVISED PER TDRR 07263 DR CHK	3/23/64	



☒	1006082	SCHEMATIC	REF
AR	1006776-22	INSULATION, SLEEVING	18
AR	1006757-1	WIRE, ELECTRICAL .010 X.020	17
AR	1006757-8	WIRE, ELECTRICAL	16
AR	1006757-11	WIRE, ELECTRICAL	15
~~1~~	~~1006838~~	~~DIODE~~	~~14~~
4	1006751	DIODE	13
25	1006752	TRANSISTOR	12
3	1006798	INDUCTOR	11
14	1006755-79	CAPACITOR	10
24	1006750-15	RESISTOR	9
1	1006750-25	RESISTOR	8
1	1006750-32	RESISTOR	7
32	1006750-39	RESISTOR	6
1	1004263-4	INSULATOR	5
1	1004263-3	INSULATOR	4
1	1004263-2	INSULATOR	3
1	1004263-1	INSULATOR	2
1	1004259	HOLDER, COMPONENT	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003165	1003400
NEXT ASSY	USED ON
APPLICATION	

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MATERIAL
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DRAWN DATE
CHECKED 18 Sep 63
APPROVAL 19 Sep 63
APPROVAL
NASA APPROVAL W J 4-18-63
MIT APPROVAL 13

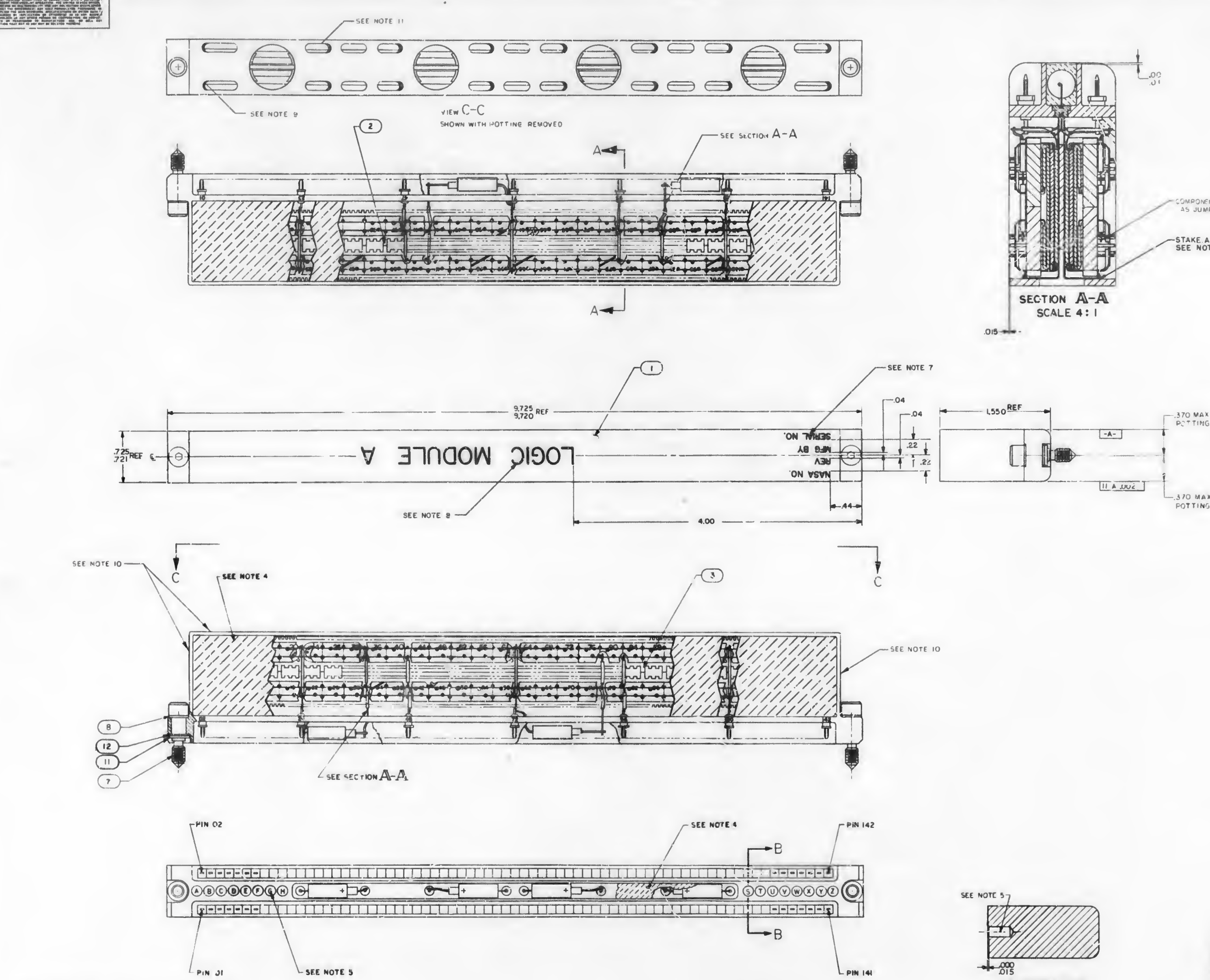
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRIVER SERVICE MODULE SUBASSEMBLY

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003173
SCALE 4/1
WT
SHEET 1 OF 1

[illegible]

A	REVISED PER TDRR 03434		
B	REVISED PER TDRR 03692	10-3-63	
C	REVISED PER TDRR 04030		
D	REVISED PER TDRR 04345		
E	REVISED PER TDRR 04726		
F	REVISED PER TDRR 05191		
G	REVISED PER TDRR 06315		
H	REVISED PER TDRR 06147		
J	REVISED PER TDRR 06753		
K	REVISED PER TDRR 09798 DR CHK ARB	1 June 64	
L	REVISED PER TDRR 11243 DR CHK RTM		
M	REVISED PER TDRR 12831 DR CHK RTM		



NOTES:

1. INTERPRET DWG IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
4. ENCAPSULATE WITH POLYURETHANE FOAM PER ND1002002 (BLACK)
5. FILL KEYING POSITIONS INDICATED BY CHART WITH THERMALLY CONDUCTIVE EPOXY RESIN PER ND 1002183
6. AR DENOTES AS REQUIRED
7. MARK .09 HIGH WHITE PER ND1002019 AND ND 1002122 TYPE II SERIALIZE PER ND1002023
8. MARK .25 HIGH WHITE PER ND 1002019 AND ND 1002122 TYPE II
9. STAKE FIND NO. 2 & 3 TO FIND NO. 1 PER ND1002004, FLOW STAKING COMPOUND PARTIALLY INTO SLOTS
10. SPRAY COAT TOP SURFACE AND ENDS PER ND1002040 FLAT BLACK
11. POTTING MATERIAL IN SLOTS AND HOLES TO BE .005 ABOVE FLUSH TO .010 BELOW FLUSH

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1004546-3	WASHER FLAT	12
2	MS-16633-4015	RING, RETAINING, EXTERNAL "E"	11
~~2~~	~~MS39086-103~~	~~SPRING, SPIRAL~~	~~10~~
~~2~~	~~1004207~~	~~DRIVER, CYLINDER~~	~~9~~
2	1003954	WASHER, FLAT	8
2	1004578-1	SCREW, JACKING	7
~~AR~~	~~1004117~~	~~PLUG, KEYING~~	~~6~~
~~AR~~	~~1006187-2~~	~~WIRE, ELECTRIC .020 DIA~~	~~5~~
~~AR~~	~~1006779-21~~	~~INSULATION SLEEVING~~	~~4~~
1	SEE CHART	MICRO LOGIC MODULE SUB-ASSY (EVEN)	3
1	SEE CHART	MICRO LOGIC MODULE, SUB-ASSY (ODD)	2
1	1003110	HEADER HOUSING ASSEMBLY	1

LIST OF MATERIALS

1003187	
NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
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MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

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MANNED SPACECRAFT CENTER
HOUSTON TEXAS

LOGIC MODULE ASSY
(TABULATED)

CODE IDENT NO —
SIZE E
MSC DRAWING NO 1003174
SCALE 2/1
WT
SHEET 1 OF 2

1003174 M

[illegible]

MODULE NO.	PART NO.	REV	EVEN	ODD	REF FLOW	REF WIRING	KEY POSITIONS
~~A17~~	~~1003174-1~~		~~1003082-2~~	~~1003081-2~~	~~1006543~~	~~1006123~~	~~ACDESTUY~~
~~A18~~	~~1003174-2~~		~~1003082-3~~	~~1003081-3~~	~~1006542~~	~~1006122~~	~~AFGHVWXY~~
~~A21~~	~~1003174-3~~	F	~~1003082-4~~	~~1003081-4~~	~~1006556~~	~~1006136~~	~~AEFGUVWY~~
~~A22~~	~~1003174-4~~		~~1003082-5~~	~~1003081-5~~	~~1006553~~	~~1006133~~	~~ACDFSTWY~~
A23	1003174-5	M	1003082-6	1003081-6	1006545	1006125	ACDGSTWY
A24	1003174-6	M	1003082-7	1003081-7	1006555	1006135	ACDHSTXY
A25	1003174-7	M	1003082-8	1003081-8	1006554	1006134	ACEFSUVY
~~A26~~	~~1003174-8~~		~~1003082-9~~	~~1003081-9~~	~~1006549~~	~~1006129~~	~~ACEGSUWY~~
~~A27~~	~~1003174-9~~		~~1003082-10~~	~~1003081-10~~	~~1006544~~	~~1006124~~	~~ACEHSUXY~~
~~A28~~	~~1003174-10~~		~~1003082-11~~	~~1003081-11~~	~~1006552~~	~~1006132~~	~~ACFGSVWY~~
~~A29~~	~~1003174-11~~	F	~~1003082-12~~	~~1003081-12~~	~~1006553~~	~~1006139~~	~~ACFHSVXY~~
A30-A31	1003174-12	M	1003082-13	1003081-13	1006548	1006128	ACGHSWXY
A32	1003174-13	M	1003082-14	1003081-14	1006546	1006126	ADEGTUWY
A33-A34	1003174-14	M	1003082-15	1003081-15	1006547	1006127	ADEHTUXY
A35	1003174-15	M	1003082-16	1003081-16	1006541	1006121	ADFGTVWY
~~A36~~	~~1003174-16~~		~~1003082-17~~	~~1003081-17~~	~~1006557~~	~~1006137~~	~~ADFHTVXY~~
~~A37~~	~~1003174-17~~		~~1003082-18~~	~~1003081-18~~	~~1006550~~	~~1006130~~	~~ADGHTWXY~~
~~A38~~	~~1003174-18~~		~~1003082-19~~	~~1003081-19~~	~~1006551~~	~~1006131~~	~~AEFHUVXY~~
A37	1003174-19	M	1003082-18	1003081-20	1006550	1006130	ADGHTWXY
A26	1003174-20	M	1003082-20	1003081-9	1006549	1006129	ACEGSUWY
A36	1003174-21	M	1003082-21	1003081-21	1006557	1006137	ADFHTVXY
A18	1003174-22	M	1003082-22	1003081-22	1006542	1006122	AFGHVWXY
A22	1003174-23	M	1003082-23	1003081-5	1006553	1006133	ACDFSTWY
A38	1003174-24	M	1003082-24	1003081-19	1006551	1006131	AEFHUVXY
A27	1003174-25	M	1003082-25	1003081-23	1006544	1006124	ACEHSUXY
A17	1003174-26	M	1003082-2	1003081-24	1006543	1006123	ACDESTUY
A28	1003174-27	M	1003082-26	1003081-25	1006552	1006132	ACFGSVWY
A21	1003174-28	M	1003082-4	1003081-26	1006556	1006136	AEFGUVWY
~~A29~~	~~1003174-29~~	~~M~~	~~1003082-12~~	~~1003081-27~~	~~1006553~~	~~1006139~~	~~ACFHSVXY~~
A29	1003174-30	M	1003082-27	1003081-27	1006553	1006139	ACFHSVXY

REVISIONS 83/ 39

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03424	7-26-63	
B	REVISED PER TDRR 03538	10-3-63	
C	REVISED PER TDRR 04030		
D	REVISED PER TDRR 04305		
E	REVISED PER TDRR 04726		
F	REVISED PER TDRR 05191		
G	REVISED PER TDRR 06315	2/11/64	
H	REVISED PER TDRR 06147		
J	REVISED PER TDRR 06150		
K	REVISED PER TDRR 04798 DR CHK QPB REC		
L	REVISED PER TDRR 11243 DR P. Edmund CHK RTM		
M	REVISED PER TDRR 12831 DR CHK RTM		

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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DRAWN DATE
CHECKED
APPROVAL
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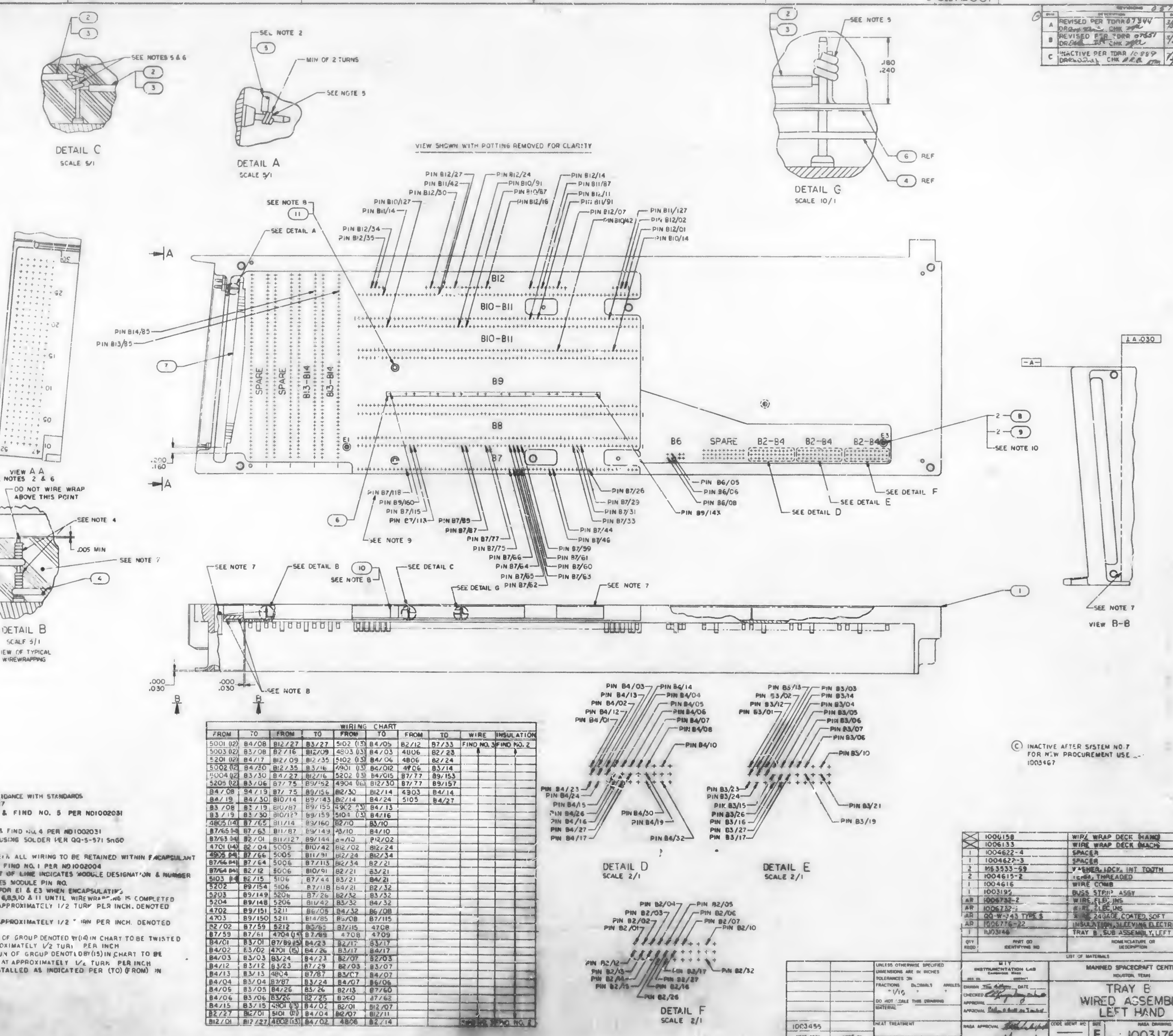
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

LOGIC MODULE ASSY
(TABULATED)

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003174
SCALE
SHEET 2 OF 2

1003176C

REV	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 07344 DR CHK	3/30/65	
B	REVISED PER TDRR 07657 DR CHK	3/23/65	HWC
C	INACTIVE PER TDRR 10889 DR CHK DRB	7/4/66	HWC



Ⓒ INACTIVE AFTER SYSTEM NO.7 FOR NEW PROCUREMENT USE 1003467

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIREWRAP USING 1006158 & FIND NO. 5 PER ND1002031
3. AR DENOTES AS REQUIRED
4. WIREWRAP USING 1006133 & FIND NO. 4 PER ND1002031
5. SOLDER PER MSFC-PROC-158 USING SOLDER PER QQ-S-571 Sn60
6. WIRE PER WIRING CHART
7. ENCAPSULATE PER ND [illegible] ALL WIRING TO BE RETAINED WITHIN ENCAPSULANT
8. BOND FIND NO. 7, 10 & 11 TO FIND NO. 1 PER ND1002004
9. LETTER & NUMBER AT LEFT OF LINE INDICATES MODULE DESIGNATION & NUMBER AT RIGHT OF LINE INDICATES MODULE PIN NO.
10. PROVIDE 3/8 DIA OPENING FOR E1 & E3 WHEN ENCAPSULATING
11. DO NOT INSTALL FIND NO'S 6,8,9,10 & 11 UNTIL WIREWRAPPING IS COMPLETED
12. 3 WIRES TO BE TWISTED APPROXIMATELY 1/2 TURN PER INCH. DENOTED BY (12) ON CHART
13. 2 WIRES TO BE TWISTED APPROXIMATELY 1/2 TURN PER INCH. DENOTED BY (13) ON CHART
14. FIRST RUN AND THIRD RUN OF GROUP DENOTED BY (14) IN CHART TO BE TWISTED WITH FORTH RUN AT APPROXIMATELY 1/2 TURN PER INCH
15. FIRST RUN AND SECOND RUN OF GROUP DENOTED BY (15) IN CHART TO BE TWISTED WITH THIRD RUN AT APPROXIMATELY 1/2 TURN PER INCH
16. ALL RUNS SHALL BE INSTALLED AS INDICATED PER (TO) (FROM) IN WIRING CHART

WIRING CHART

FROM	TO	FROM	TO	FROM	TO	FROM	TO	WIRE	INSULATION
5001 (12)	B4/08	B12/27	B3/27	5102 (13)	B4/05	B2/12	B7/33	FIND NO. 3	FIND NO. 2
5003 (12)	B3/08	B2/16	B12/09	4803 (13)	B4/03	4806	B2/23		
5201 (12)	B4/17	B12/09	B12/35	5102 (13)	B4/06	4806	B2/24		
5002 (12)	B4/20	B12/35	B3/16	4901 (13)	B4/012	4906	B3/14		
5004 (12)	B3/30	B4/27	B12/16	5202 (13)	B4/015	B7/77	B9/153		
5205 (12)	B3/06	B7/75	B9/152	4904 (13)	B12/30	B7/77	B9/157		
B4/08	B4/19	B7/75	B9/156	B12/30	B12/14	4303	B4/14		
B4/19	B4/30	B10/14	B9/143	B12/14	B4/24	5105	B4/27		
B3/08	B3/19	B10/87	B9/155	4902 (13)	B4/13				
B3/19	B3/30	B10/127	B9/159	5104 (13)	B4/16				
4805 (14)	B7/65	B11/14	B9/160	B2/10	B3/10				
B7/65 (14)	B7/63	B11/87	B9/149	B3/10	B4/10				
B7/63 (14)	B2/01	B11/127	B9/144	B4/10	B12/02				
4701 (14)	B2/04	5005	B10/42	B12/02	B12/24				
4905 (14)	B7/66	5005	B11/91	B12/24	B12/34				
B7/66 (14)	B7/64	5006	B7/113	B12/34	B2/21				
B7/64 (14)	B2/12	5006	B10/91	B2/21	B3/21				
5103 (14)	B2/15	5106	B7/44	B3/21	B4/21				
5202	B9/154	5106	B7/118	B4/21	B2/32				
5203	B9/149	5206	B7/26	B2/32	B3/32				
5204	B9/148	5206	B11/42	B3/32	B4/32				
4702	B9/151	5211	B6/05	B4/32	B6/08				
4703	B9/150	5211	B14/85	B6/08	B7/115				
B2/02	B7/59	5212	B13/65	B7/115	4708				
B7/59	B7/61	4704 (15)	B7/89	4708	4709				
B4/01	B3/01	B7/89 (15)	B4/23	B2/17	B3/17				
B4/02	B3/02	4701 (15)	B4/26	B3/17	B4/17				
B4/03	B3/03	B3/24	B4/23	B2/07	B2/03				
B4/12	B3/12	B3/23	B7/29	B2/03	B3/07				
B4/13	B3/13	4804	B7/87	B3/07	B4/07				
B4/04	B3/04	B7/87	B3/24	B4/07	B6/06				
B4/05	B3/05	B4/26	B3/26	B2/13	B7/60				
B4/06	B3/06	B3/26	B2/25	B7/60	B7/62				
B4/15	B3/15	4901 (13)	B4/02	B2/01	B12/07				
B2/27	B12/01	5101 (13)	B4/04	B12/07	B12/11				
B12/01	B12/27	4802 (13)	B4/02	4808	B2/14			FIND NO. 3	FIND NO. 2

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006158	WIRE WRAP DECK (HAND)	REF
☒	1006133	WIRE WRAP DECK (MACH)	REF
1	1004622-4	SPACER	11
1	1004622-3	SPACER	10
2	MS35333-69	WASHER, LOCK, INT TOOTH	9
2	1004615-2	TERM, THREADED	8
1	1004616	WIRE COMB	7
1	1003195	BUSS STRIP ASSY	6
AR	1006732-2	WIRE, ELEC, INS	5
AR	1006732-1	WIRE, ELEC, INS	4
AR	QQ-W-343 TYPE S	WIRE, 24 GAGE, COATED, SOFT	3
AR	1006776-22	INSULATION, SLEEVING ELECTRICAL	2
1	1003146	TRAY B, SUB ASSEMBLY, LEFT HAND	1

LIST OF MATERIALS

1003455	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±1/16 DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
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FINAL FINISH

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INSTRUMENTATION LAB
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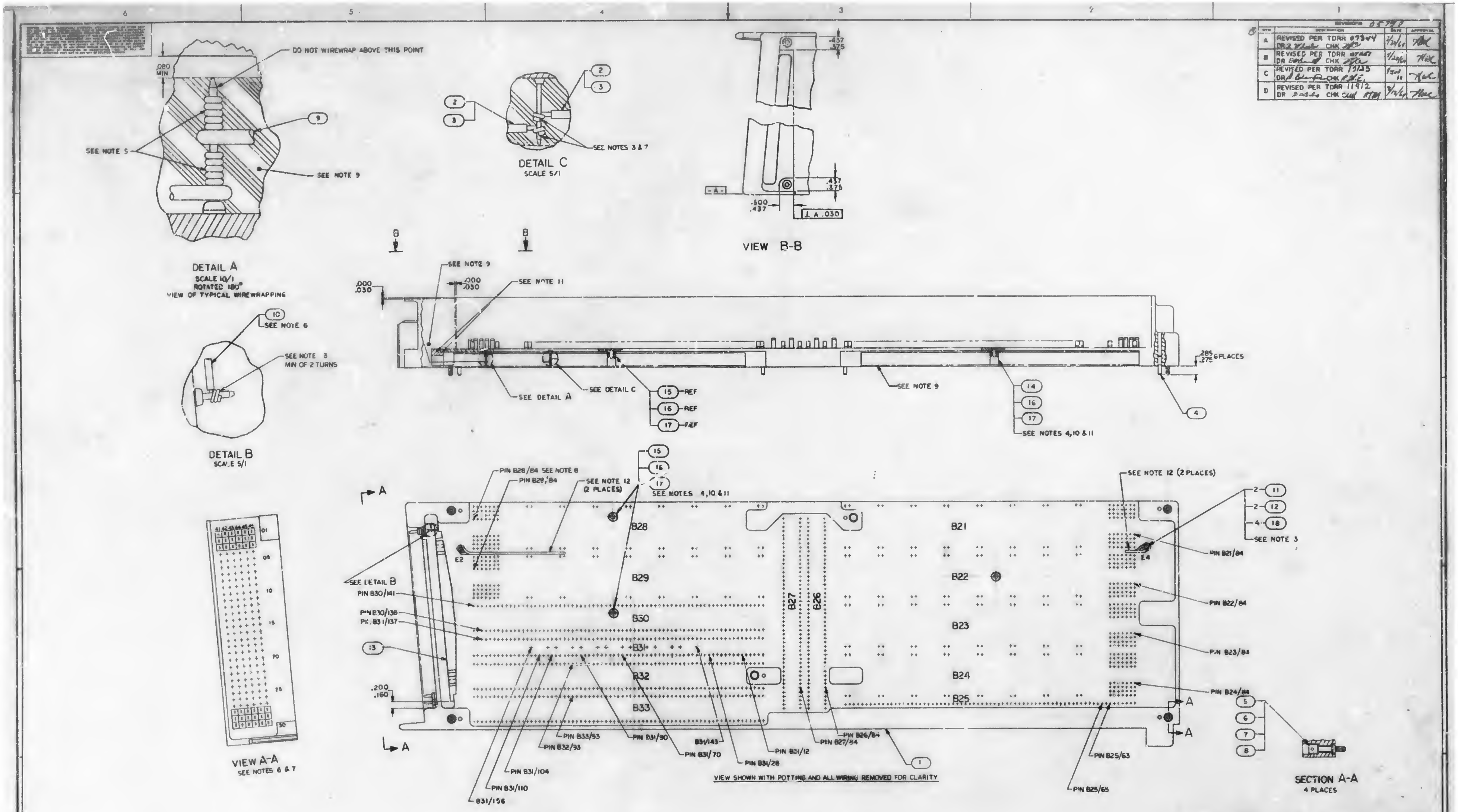
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY B
WIRED ASSEMBLY
LEFT HAND

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003176
SCALE 1/1
WT
SHEET 1 OF 1



	REVISIONS 05778		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 07344 DR R Wheeler CHK	3/24/67	
B	REVISED PER TDRR 07657 DR CHK	4/28/67	
C	REVISED PER TDRR 19125 DR CHK R.P.E.	5 Jul 67	
D	REVISED PER TDRR 11912 DR CHK	9/3/67	

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED
3. SOLDER PER ND1002071
4. DO NOT INSTALL FIND NO.4 THRU NO.17 UNTIL WIREWRAPPING IS COMPLETE
5. WIREWRAP USING 1006154 & FIND NO. 9 PER ND1002031
6. WIREWRAP USING 1006159 & FIND NO. 10 PER ND1002031
7. WIRE PER WIRING CHART
8. LETTER AND NUMBER AT LEFT OF LINE INDICATES MODULE DESIGNATION & NUMBER AT RIGHT OF LINE INDICATES MODULE PIN NO.
9. ENCAPSULATE PER ND 1002217. ALL WIRES TO BE RETAINED WITHIN ENCAPSULANT EXCEPT FIND NO. 18
10. DETERMINE ACTUAL DIM. BETWEEN MOUNTING SURFACES OF FIND NO. 14 & 15 AND ON 1003176 FIND NO. 10 & 11 TO DETERMINE THICKNESS OF NO. 16
11. BOND FIND NO. 13 & FIND NO. 16 TO FIND NO. 1 AND FIND NO. 14 & FIND NO. 15 TO FIND NO. 16 PER ND1002004
12. WIRE SHALL PROTRUDE SIX (6) INCHES FROM POTTING
13. MARKING SHOWN FOR REFERENCE ONLY (B21 - B33)

WIRING CHART			
FROM	TO	WIRE	INSULATION
4601	B28/84	FIND NO. 3	FIND NO. 2
B28/84	B29/84		
B29/84	B30/141		
B30/141	B31/70		
4601	B30/138		
B30/138	B31/137		
B31/137	B32/93		
B32/93	B33/93		
4602	B27/86		
B27/86	B26/86		
B26/86	B25/63		
4602	B21/84		
B21/84	B22/84		
B22/84	B23/84		
B23/84	B24/84		
4603	B31/86		
4603	B31/104		
4501	B31/12		
4501	B31/28		
4608	B31/90		
4604	B31/110		
4609	B31/90		
4610	B25/65		
B31/156	B31/112	FIND NO. 3	FIND NO. 2

SEE NOTE 10

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1006159	WIRE WRAP CARD (HAND)	REF
☒	1006154	WIRE WRAP CARD (MACH)	REF
4	1006732-3	WIRE, ELEC, INS.	18
3	MS24693-PC3	SCREW, FLAT HD 100°	17
AR	1004623	SHIM	16
2	1004622-2	SPACER	15
1	1004622-1	SPACER	14
1	1004616	WIRE COMB	13
2	MS35333-69	WASHER, LOCK, FLAT, INT TOOTH	12
2	1004615-2	TERMINAL, THREADED	11
AR	1006732-2	WIRE, ELEC, INS	10
AR	1006732-1	WIRE, ELEC, INS	9
4	1008145	SPRING PIN	8
8	1004546-1	WASHER	7
4	1004257	SCREW, EJECTION	6
4	1004256	DRIVE CYLINDER, EJECTION SCREW	5
6	1004369	PIN, STEP	4
AR	QQ-W-343 TYPE S	WIRE, 24 GAGE, COATED, SOFT	3
AR	1006776-22	INSULATION SLEEVING, ELECTRICAL	2
1	1003145	TRAY B SUBASSEMBLY, RIGHT HAND	1

LIST OF MATERIALS

1005-55	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/16 DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

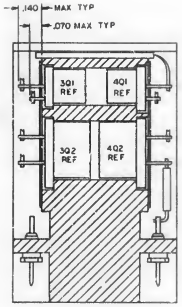
TRAY B
WIRED ASSEMBLY
RIGHT HAND

CODE IDENT NO. —— SIZE E NASA DRAWING NO 1003177
SCALE 1/1 WT SHEET 1 OF

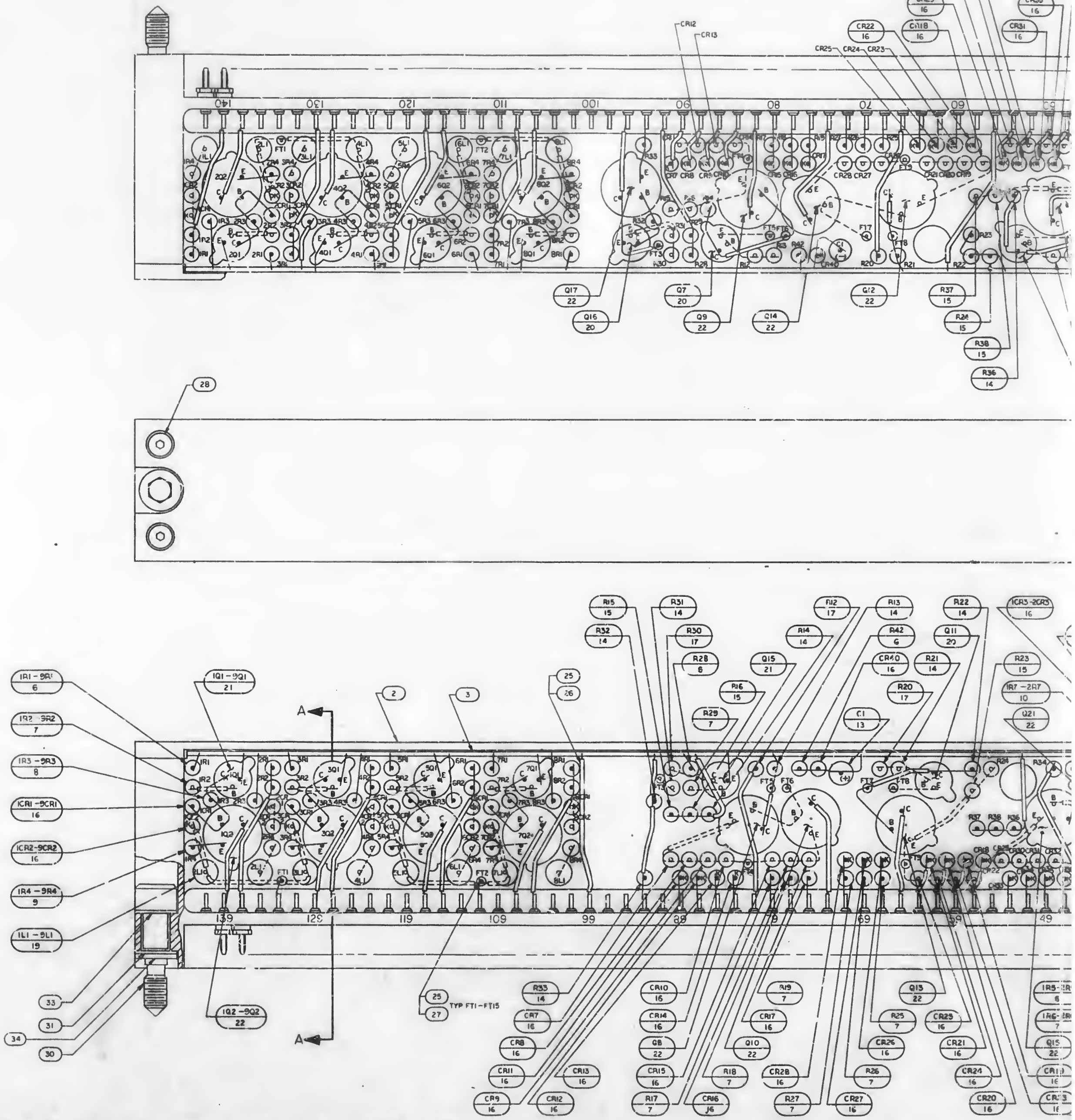
CHART A REF R4 (FIND NO 9) SEE NOTE 16	
VALUE (OHMS)	PART NO.
1.5	1006788 -51
1.6	-53
1.7	-16
1.8	-18
1.9	-20
2.0	-22
2.1	-24
2.2	-26
2.3	-28
2.4	-15
2.5	-29
2.6	-30
2.7	-31
2.8	-32

CHART B REF R10 & R11 (FIND NO.18) SEE NOTE 16	
VALUE (OHMS)	PART NO.
2.5	1006788 -29
2.6	-30
2.7	-31
2.8	-32
2.9	-33
3.0	-34
3.1	-35
3.2	-36
3.3	-37
3.4	-38
3.5	-39
3.6	-40
3.7	-41
3.8	-42
3.9	-43
4.0	-44
4.1	-45
4.2	-46
4.3	-47
4.4	-48
4.5	-49

CHART C REF R48 & R49 (FIND NO.35) SEE NOTE 16	
VALUE (OHMS)	PART NO
3.0	1006788 -34
3.1	-35
3.2	-36
3.3	-37
3.4	-38
3.5	-39
3.6	-40
3.7	-41
3.8	-42
3.9	-43
4.0	-44
4.1	-45
4.2	-46
4.3	-47
4.4	-48
4.5	-49
4.6	-50
4.7	-1
4.8	-2
4.9	-3
5.0	-4

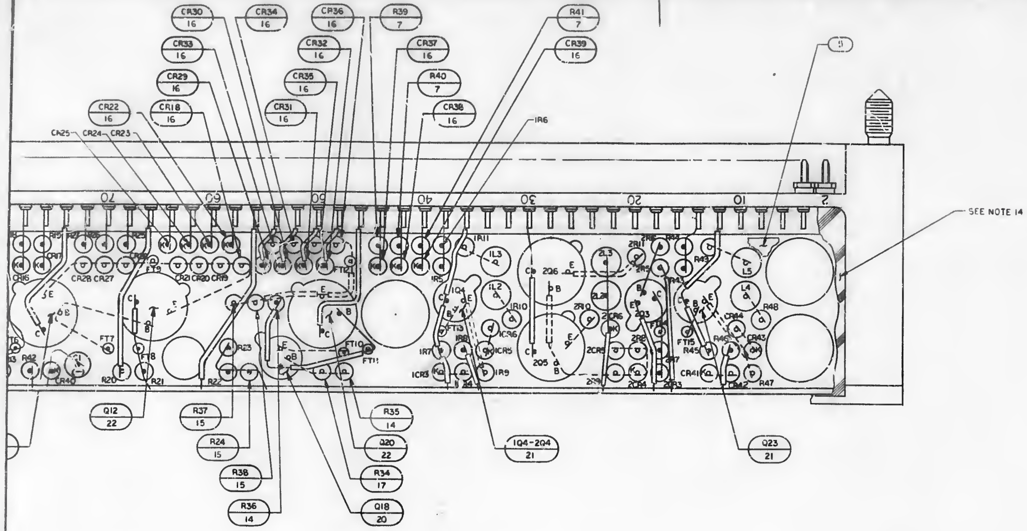


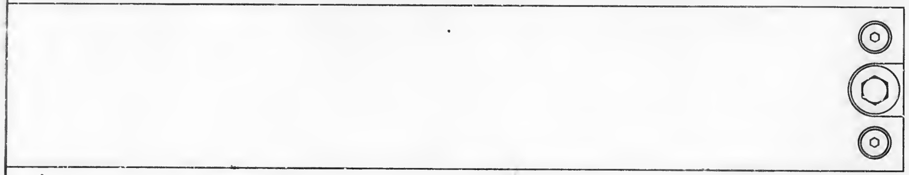
SECTION A-A

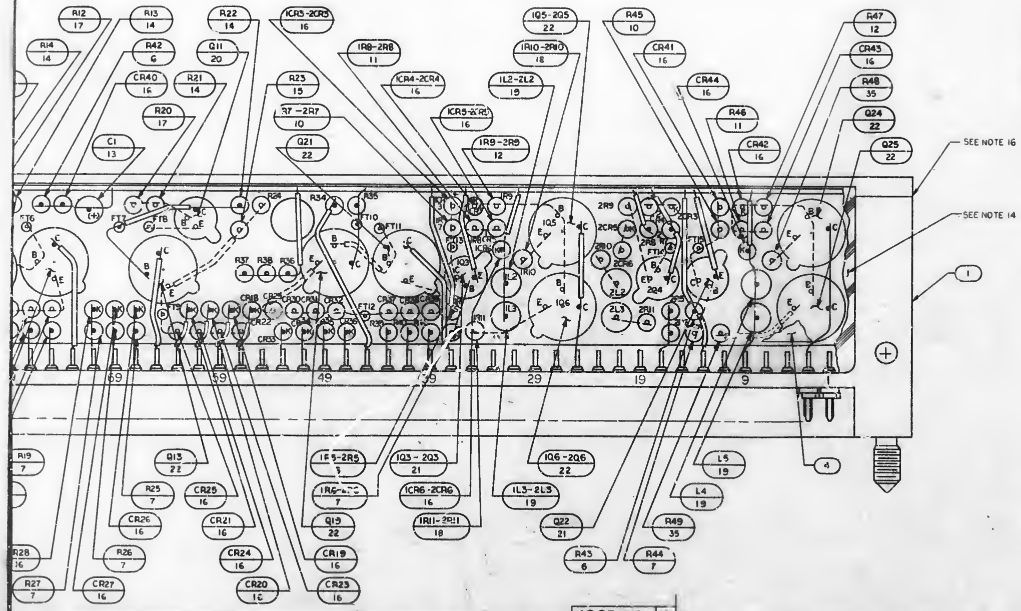


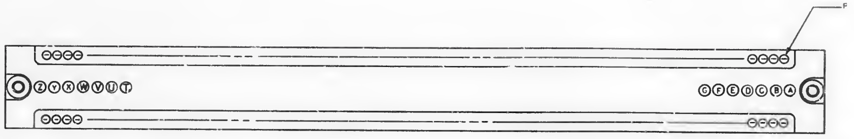
NOTES

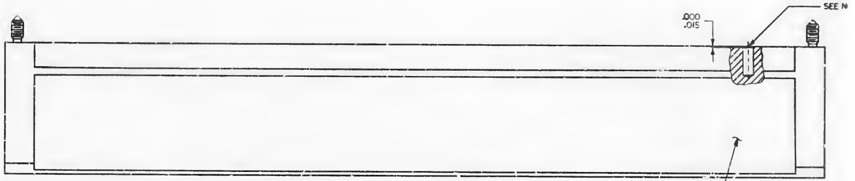
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE FIND NO. 6 THRU 21 PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. DASHED LINE INDICATES FIRST LEVEL WIRING AND SOLID LINES INDICATES SECOND LEVEL WIRING
7. K DENOTES CATHODE END OF DIODE
8. FT DENOTES FEED THRU
9. AR DENOTES AS REQUIRED
10. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIAL [illegible] PER ND1002023
11. MARK .250 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 1
12. FILL KEYING HOLES MARKED A,B,C,D,T,U,W, AND Y USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183
13. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
14. ASSEMBLE FIND NO.22 TO FIND NO.1 USING FIND NO.32 TO COMPLETELY FILL THE INTERFACES
15. APPLY FIND NO.32 TO INTERFACE PRIOR TO ASSEMBLY
16. VALUE TO BE DETERMINED BY ELECTRICAL TEST
    FOR FIND NO. 9 SEE CHART A
    FOR FIND NO 18 SEE CHART B
    FOR FIND NO. 35 SEE CHART C

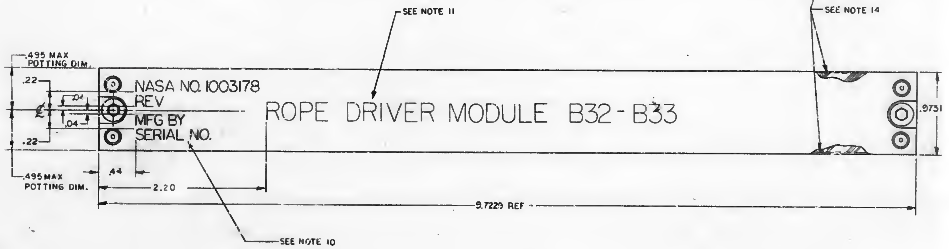








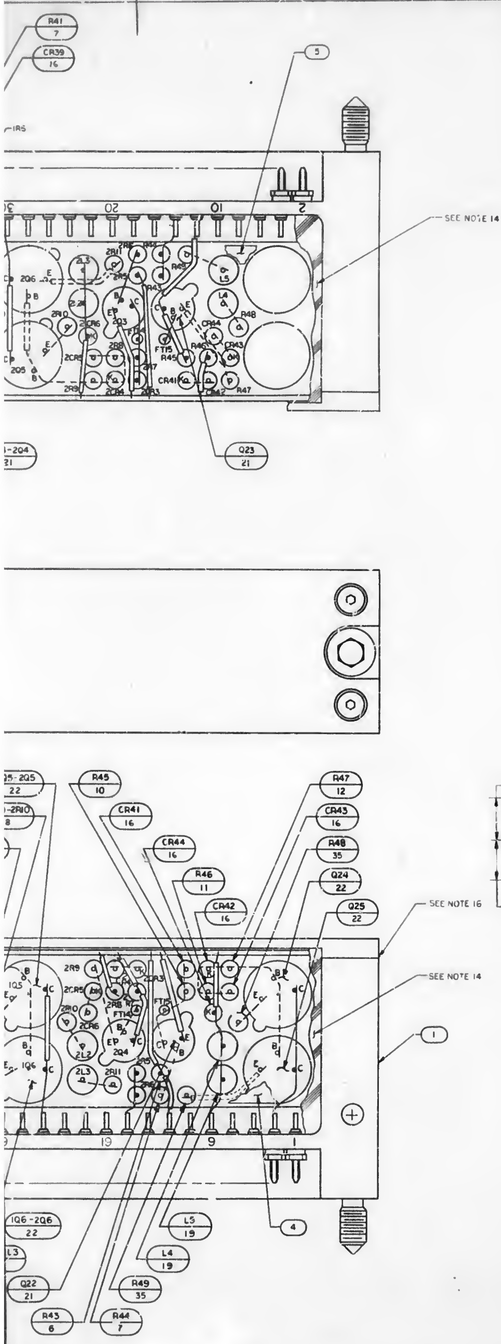


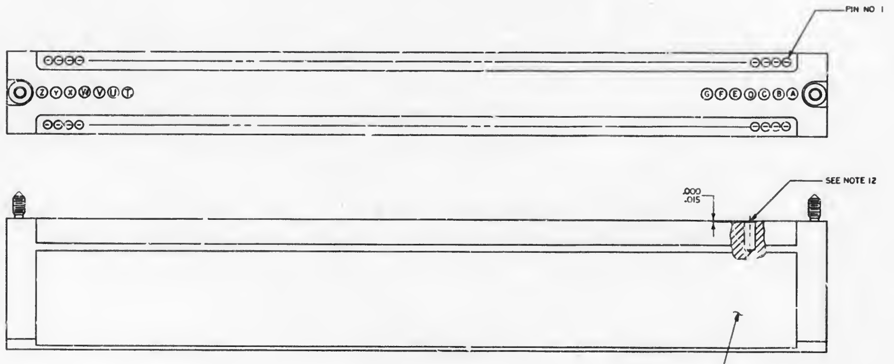


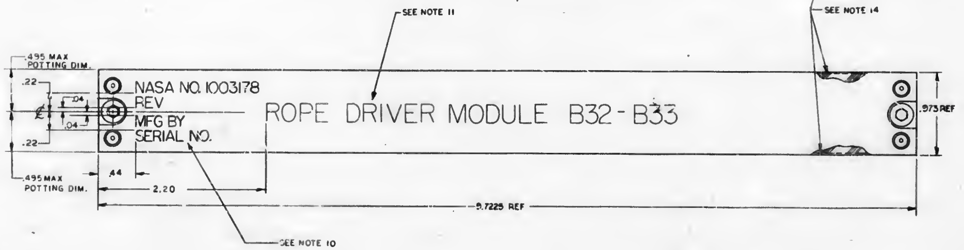
MARKING VIEW
SCALE 2/1

1003178 J

	REVISIONS		
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 04109	[illegible]	[illegible]
B	REVISED PER TDRR 04392	[illegible]	[illegible]
C	REVISED PER TDRR 04777	[illegible]	[illegible]
D	REVISED PER TDRR 05562	12-31-63	[illegible]
E	REVISED PER TDRR 05797	[illegible]	[illegible]
F	REVISED PER TDRR 08185 DRWD [illegible] CHK [illegible]	7/30/64	[illegible]
G	REVISED PER TDRR 11243 DR [illegible] CHK CJM RTM	9/4/64	[illegible]
H	REVISED PER TDRR 12304 DR [illegible] CHK CJM RTM	9/28/64	[illegible]
J	REVISED PER TDRR 13080 DR [illegible] CHK CJM RTM	10/14/64	[illegible]







MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
REF	1006147	SCHEMATIC	
2	SEE NOTE 16	RESISTOR	35
2	MS16633-4015	RING, RETAINING, EXTERNAL, "E"	34
2	1004545-1	WASHER, FLAT	33
AR	1006879	COMPOUND THERMOCONDUCTIVE	32
2	1004546-3	WASHER, FLAT	31
2	1004579-1	SCREW, JACKING	30
~~2~~	~~1004207~~	~~DRIVE CYLINDER~~	~~29~~
4	1006273-11	SCREW, CAP, BUTTON HEAD	28
A/R	1006757-8	WIRE, ELECTRICAL	27
A/R	1006757-1	WIRE, ELECTRICAL	26
A/R	1006776-22	INSULATION, SLEEVING	25
~~8~~	~~1004117~~	~~PLUG, KEYING~~	~~24~~
~~2~~	~~1008145~~	~~PIN, SPRING~~	~~23~~
24	1003089-1	TRANSISTOR POTTED	22
15	1003520-1	TRANSISTOR POTTED	21
4	1003520-2	TRANSISTOR POTTED	20
14	1010406-10	COIL	19
4	SEE NOTE 16	RESISTOR	18
4	1006750-28	RESISTOR	17
62	1006751	DIODE	16
6	1006750-35	RESISTOR	15
9	1006750-39	RESISTOR	14
1	1006755-69	CAPACITOR	13
3	1006788-8	RESISTOR	12
3	1006750-49	RESISTOR	11
3	1006750-33	RESISTOR	10
8	SEE NOTE 16	RESISTOR	9
8	1006750-22	RESISTOR	8
21	1006750-15	RESISTOR	7
13	1006750-43	RESISTOR	6
1	1004269-2	INSULATOR	5
1	1004269-1	INSULATOR	4
1	1003169	MATRIX ASSY	3
1	1003112	COVER	2
1	1003170	HEADER, HOUSING ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003184	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible] 10-3-63
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ROPE DRIVER MODULE
B32-B33
ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003178
SCALE 4/1
WT
SHEET 1 OF 1

1003178 J

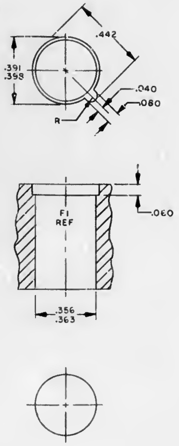
1003178 J

[redacted]

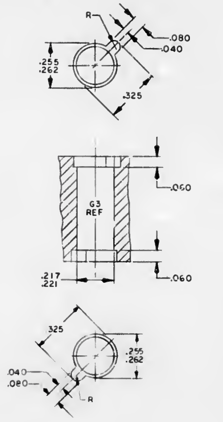
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.000	.000	.006	.168 .172	15
A2	.368	.000			
A3	.680	.000			
A4	1.048	.000			
A5	1.360	.000			
A6	1.728	.000			
A7	2.040	.000			
A8	2.408	.000			
A9	2.720	.000			
A10	6.805	.257			
A11	6.805	.060			
A12	7.458	.257			
A13	7.459	.060			
A14	8.286	.257			
A15	8.286	.060			
B1	−.087	.167	.006	.110 .114	18
B2	.452	.167			
B3	.593	.167			
B4	1.132	.167			
B5	1.273	.167			
B6	1.812	.167			
B7	1.953	.167			
B8	2.492	.167			
B9	2.633	.167			
B10	6.745	.714			
B11	7.514	.714			
B12	6.900	.399			
B13	7.363	.399			
B14	6.620	−.029			
B15	7.640	.028			
B16	8.073	−.034			
B17	8.328	.714			
B18	8.378	.399			
C1	−.090	.712	.006	.100 .104	79
C2	−.090	.580			
C3	−.090	.448			
C4	−.090	.314			
C5	.034	.491			
C6	.332	.491			
C7	.455	.712			
C8	.590	.712			
C9	.455	.580			
C10	.590	.580			
C11	.455	.448			
C12	.590	.448			
C13	.714	.491			
C14	.455	.314			
C15	.590	.314			
C16	1.270	.712			
C17	1.135	.580			
C18	1.270	.580			
C19	1.135	.448			
C20	1.270	.448			
C21	1.394	.491			
C22	1.135	.314			
C23	1.270	.314			
C24	1.692	.491			
C25	1.815	.712			
C26	1.950	.712			
C27	1.815	.580			
C28	1.950	.580			
C29	1.815	.448			
C30	1.950	.448			
C31	2.074	.491			
C32	1.815	.314			
C33	1.950	.314			
C34	2.372	.491			
C35	2.495	.712			
C36	2.630	.712			
C37	2.495	.580			
C38	2.630	.580			
C39	2.495	.448			
C40	2.630	.448			
C41	2.754	.491			
C42	2.495	.314			
C43	2.630	.314			
C44	3.176	.713			
C45	3.176	.581			
C46	3.170	.402			
C47	3.170	.094			
C48	3.233	−.034			
C49	3.306	.713			
C50	3.306	.581			
C51	3.298	.402			
C52	3.295	.094			
C53	3.358	−.034			
C54	3.428	.402			
C55	3.428	.094			
C56	3.483	−.034			
C57	3.545	.094			
C58	3.608	−.034			
C59	3.747	.714			
C60	3.876	.714			
C61	3.860	.094			
C62	3.860	−.034			
C63	3.986	.094			
C64	3.986	−.034			
C65	4.044	.714			
C66	4.110	.094			
C67	4.110	−.034			
C68	4.174	.714			
C69	4.360	.094			
C70	4.360	−.034			
C71	4.485	.094			
C72	4.485	−.034			
C73	4.591	.714			
C74	4.610	.094			
C75	4.610	−.034			
C76	4.720	.714			
C77	4.857	−.034			
C78	4.920	.094			
C79	4.982	−.034			
C80	5.045	.094	.006	.100 .104	54
C81	5.107	−.034			
C82	5.170	.094			
C83	5.220	.714			
C84	5.220	.581			
C85	5.232	−.034			
C86	5.251	.310			
C87	5.295	.094			
C88	5.345	.714			
C89	5.380	.310			
C90	5.420	.094			
C91	5.509	.310			
C92	5.482	−.034			
C93	5.545	.094			
C94	5.607	−.034			
C95	5.670	.094			
C96	5.732	−.034			
C97	5.780	.714			
C98	5.795	.094			
C99	5.857	−.034			
C100	5.910	.714			
C101	6.106	.094			
C102	6.106	−.034			
C103	6.231	.094			
C104	6.231	−.034			
C105	6.356	.094			
C106	6.356	−.034			
C107	6.481	.094			
C108	6.481	−.034			
C109	6.484	.714			
C110	6.484	.584			
C111	6.615	.714			
C112	6.615	.584			
C113	6.776	.453			
C114	7.486	.453			
C115	7.514	.584			
C116	7.649	.714			
C117	7.649	.584			
C118	7.778	.714			
C119	7.778	.584			
C120	7.778	.094			
C121	7.778	−.034			
C122	7.918	.094			
C123	7.918	−.034			
C124	8.068	.714			
C125	8.068	.584			
C126	8.198	.714			
C127	8.198	.584			
C128	8.328	.584			
C129	1.012	.491			
C130	1.135	.712			
C131	3.052	.491			
C132	2.987	−.034			
C133	6.745	.584			
C134	8.227	.450			
D1	.522	−.060	.006	.059 .062	15
D2	1.882	−.060			
D3	3.090	.646			
D4	3.695	.062			
D5	3.850	.581			
D6	3.957	.581			
D7	4.509	.581			
D8	4.659	.581			
D9	4.770	.062			
D10	5.910	.602			
D11	6.050	.580			
D12	5.943	.062			
D13	6.484	.472			
D14	7.178	.467			
D15	7.941	.472			
E1	.183	.255	.006	SEE DETAIL A	11
E2	.863	.255			
E3	1.543	.255			
E4	2.223	.255			
E5	2.903	.255			
E6	3.695	.330			
E7	4.122	.372			
E8	4.770	.332			
E9	5.780	.372			
E10	7.132	.564			
E11	7.132	.117			
F1	6.207	.372	.006	SEE DETAIL E	3
F2	8.607	.564			
F3	8.607	.117			
G1	.183	.634	.006	SEE DETAIL B	9
G2	.863	.634			
G3	1.543	.634			
G4	2.223	.634			
G5	2.903	.634			
G6	3.507	.634			
G7	6.563	.290			
G8	7.700	.289			
G9	7.990	.289			
H1	4.982	.635	.006	SEE DETAIL C	1
J1	5.536	.633	.006	SEE DETAIL D	1
K1	4.329	.682	.006	.153 .157	1

NOTES:

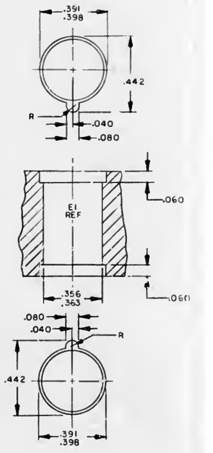
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATL: MAG ALLOY ZK60A-T5 PER QQ-M-31
3. FINISH ANODIZE PER MIL-M-45202, TYPE I CLASS C
4. UNLESS OTHERWISE SPECIFIED ALL SURFACES 125✓
5. INSTALL FIND NO 2 PER ND1002121
6. REMOVE ALL BURRS AND BREAK SHARP EDGES .005/.015
7. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII TO BE .010 MAX



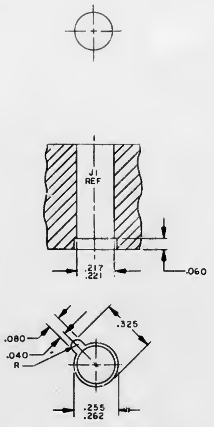
DETAIL E



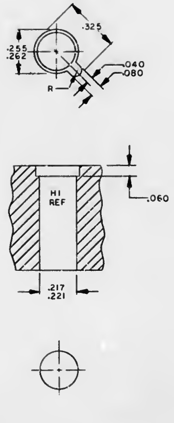
DETAIL B



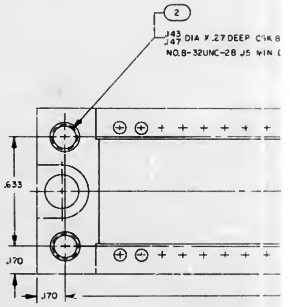
DETAIL A

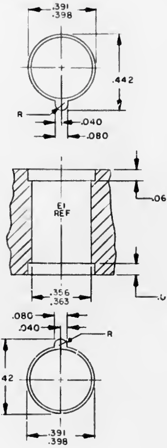


DETAIL D

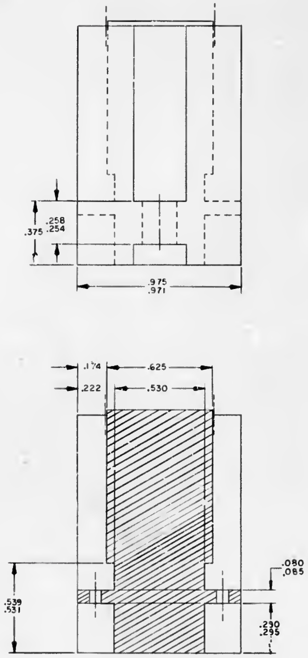


DETAIL C

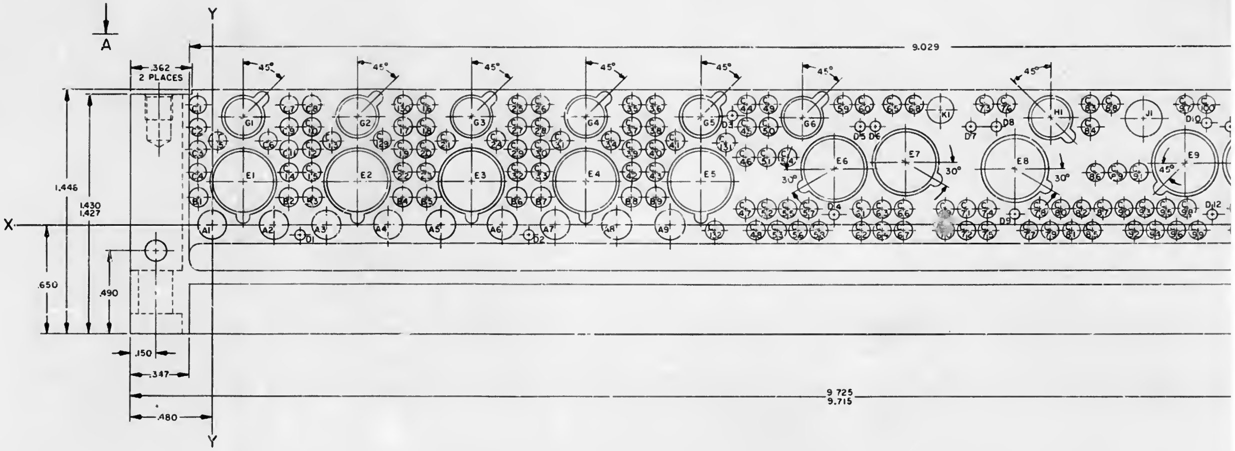


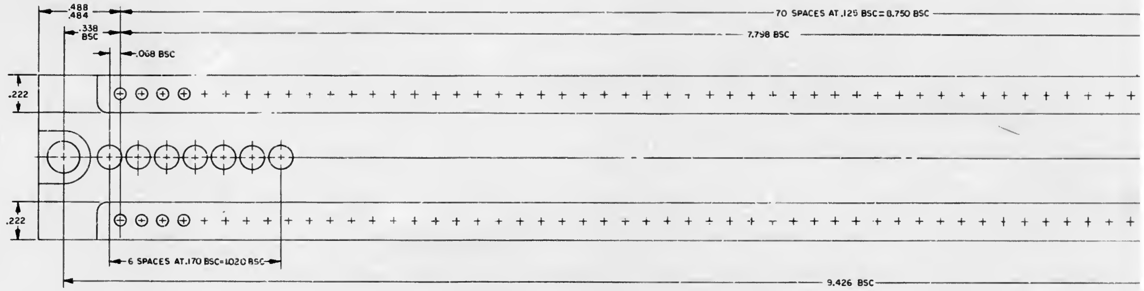


DETAIL A

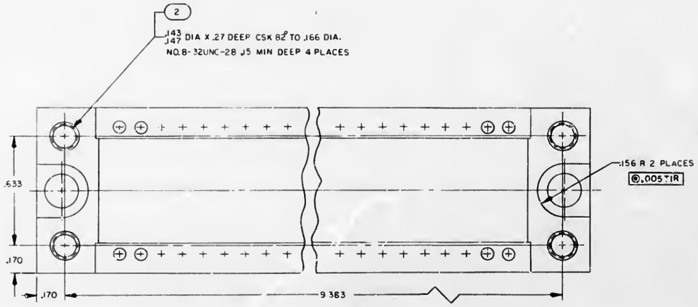


SECTION A-A



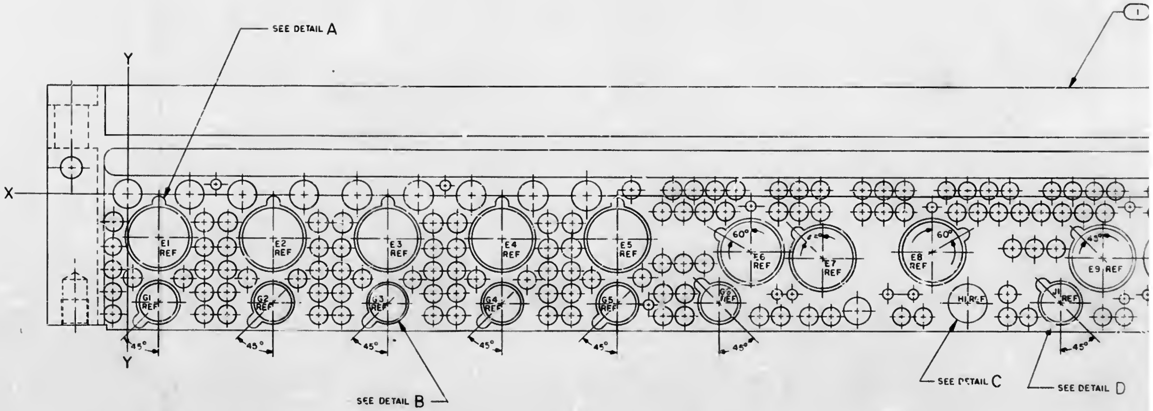


.488
.484
.338
BSC
.068 BSC
70 SPACES AT .125 BSC = 8.750 BSC
7.798 BSC
.222
.222
6 SPACES AT .170 BSC = 1.020 BSC
9.426 BSC



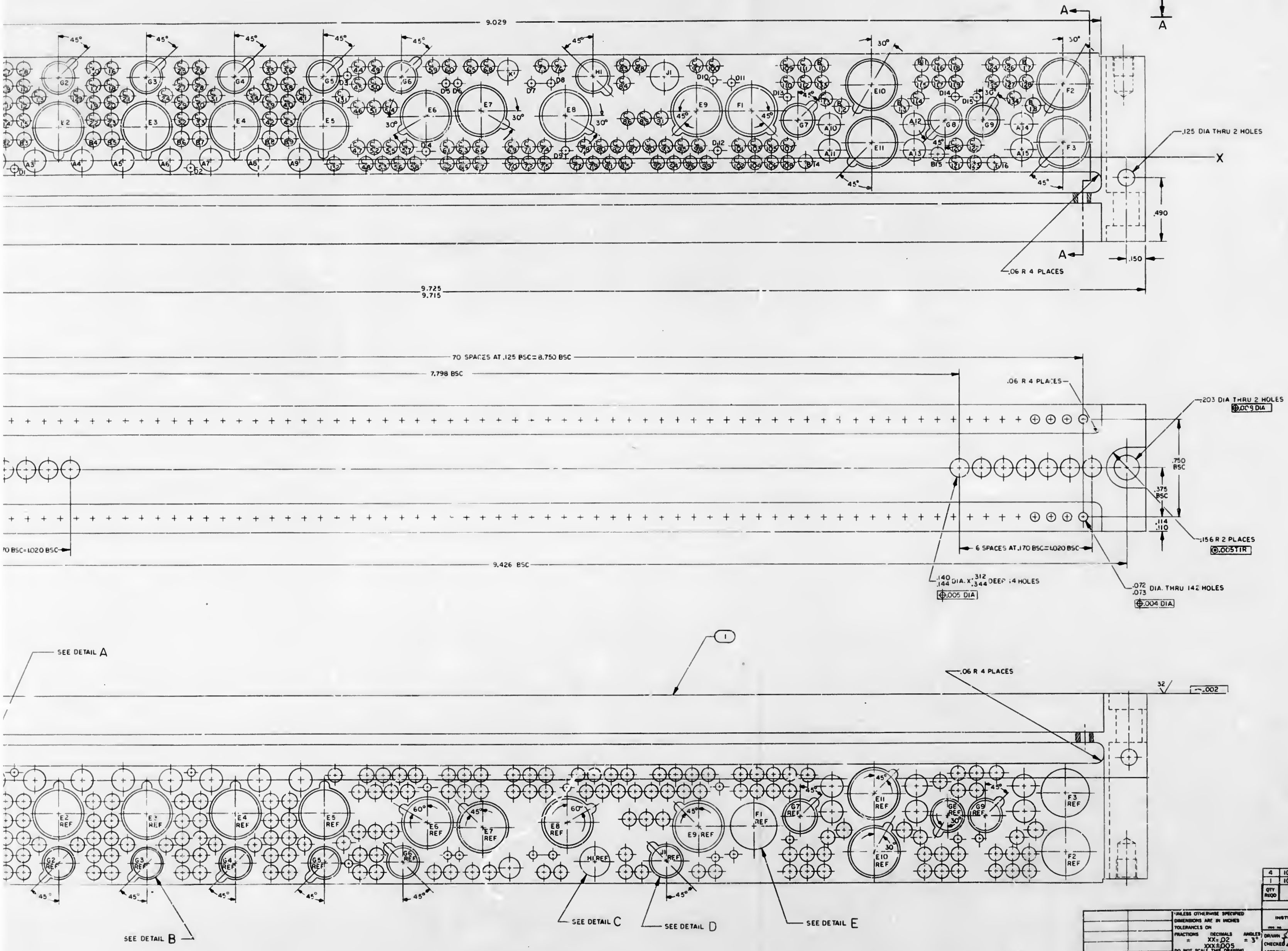
2
.143
.147 DIA X .27 DEEP CSK 82° TO .166 DIA.
NO.8-32UNC-2B .15 MIN DEEP 4 PLACES
.156 R 2 PLACES
⊚ .005 TIR
.633
.170
.170
9.383

VIEW A-A



1003179 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR		
B	REVISED PER TDRR		
C	REVISED PER TDRR 08411 DR. CHK R.P.B.	5/7/64	



4	1000115-1	INSERT, THREADED SELF LOCKING	2
1	1003179-1	HEADER HOUSING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ± 3°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 3

1003170
NEXT ASSY USED ON
APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN 9/12/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 10-3-63
APPROVAL W. 30 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

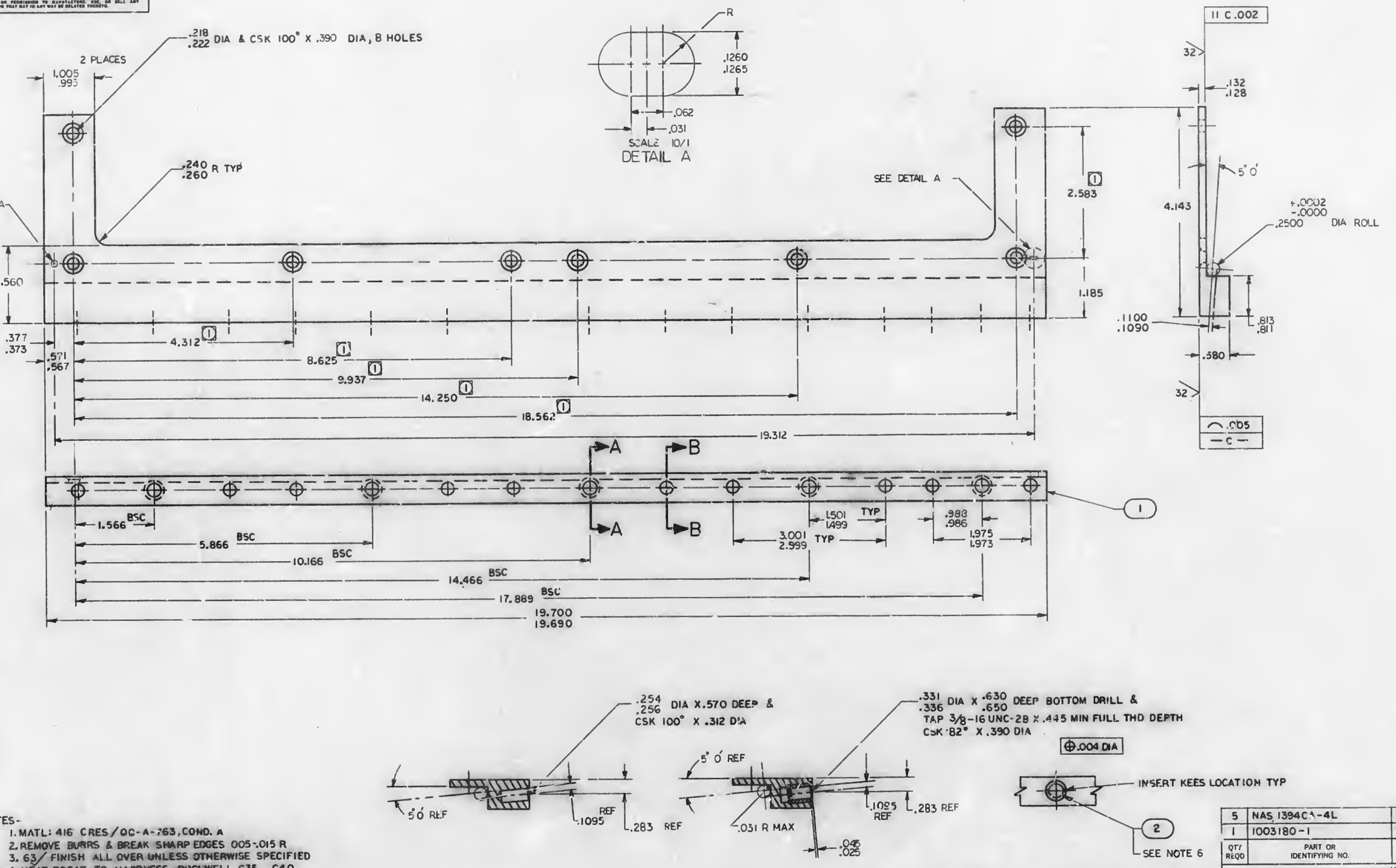
HEADER HOUSING
ROPE DRIVER MODULE
B-32 B-33

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003179
SCALE 4/1
SHEET 1 OF 1

3179 C

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 04730			
SYM	DESCRIPTION	DATE	APPROVAL



SECTION B-B
10 PLACES

SECTION A-A
5 PLACES

NOTES-

1. MATL: 416 CRES / QQ-A-763, COND. A
2. REMOVE BURRS & BREAK SHARP EDGES .005-.015 R
3. 63/ FINISH ALL OVER UNLESS OTHERWISE SPECIFIED
4. HEAT TREAT TO HARDNESS ROCKWELL C35 - C40
5. PASSIVATE / MIL-F-14072, E300
6. ASSEMBLY FIND NO. 2 PER NO 1002121
7. ① DIMENSIONS CONTROLLED BY ICD MH-01002-116

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
5	NAS 1394CA-4L	INSERT	2
1	1003180-1	PLATE, TOE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±0° 15'
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 1
HEAT TREATMENT
FINAL FINISH SEE NOTE 5

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN D. Milligan DATE
CHECKED
APPROVAL
APPROVAL E. J. Duggan
NASA APPROVAL
MIT APPROVAL W. Kupfer 26 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PLATE, TOE
COMPUTER

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1003180
SCALE 1/1
WT
SHEET 1 OF 1

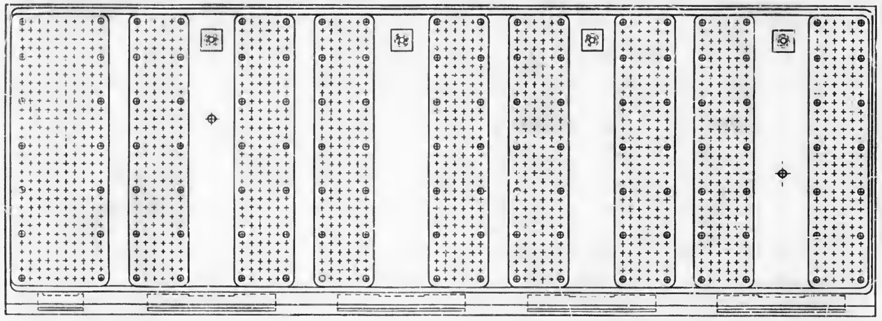
1003180

MASTER

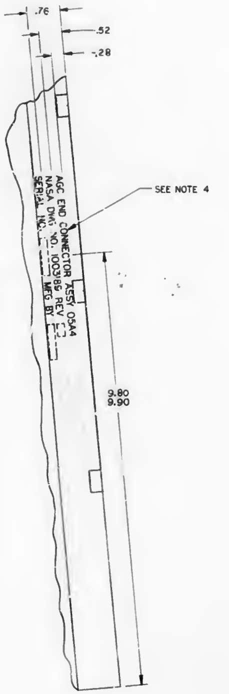
[illegible]

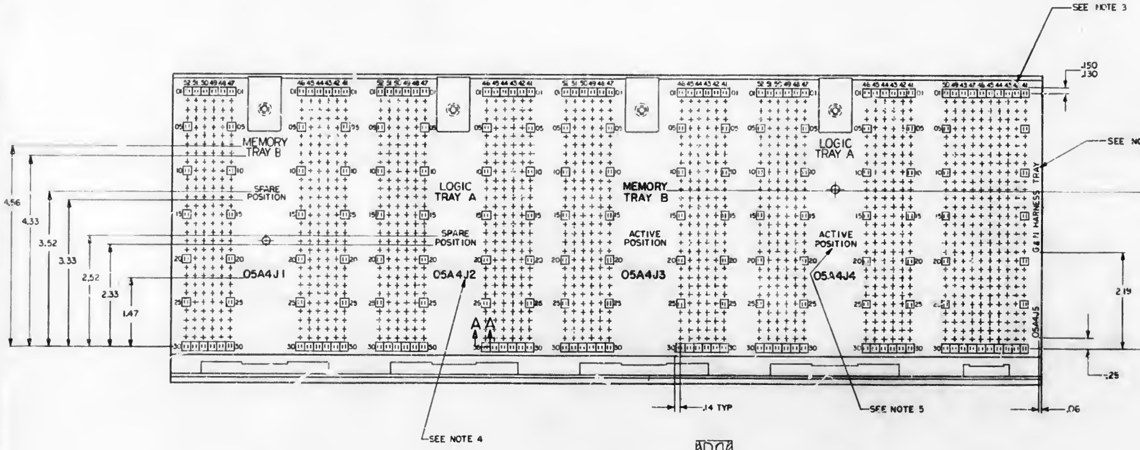
REVISIONS 04147

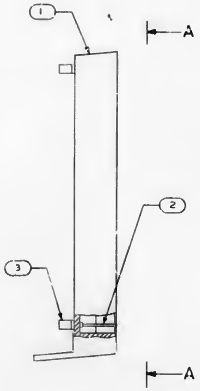
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04723	[illegible]	[illegible]
B	REVISED PER TDRR 06022	[illegible]	[illegible]
C	REVISED PER TDRR 07342 DR [illegible] CHK [illegible]	[illegible]	[illegible]

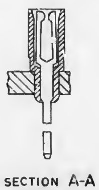


VIEW A-A









SECTION A-A
SCALE 4/1
TYP 1740 PLACES

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ASSEMBLE FIND NO. 2 AND NO. 3 PER ND 1002136
3. MARK $^{.100}_{.080}$ HIGH WHITE PER ND 1002019
4. MARK $^{.170}_{.150}$ HIGH WHITE PER ND 1002019
5. MARK $^{.135}_{.115}$ HIGH WHITE PER ND 1002019
6. ~~MARKING IS FOR REFERANCE ONLY~~

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
1740	1010380	INSULATOR, BUSHING, FEMALE	3
1740	1010379-5	CONTACT, ELECTRICAL FEMALE	2
1	1004275	CONNECTOR COMPUTER END	1

NEXT ASSY	USED ON
1003189	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

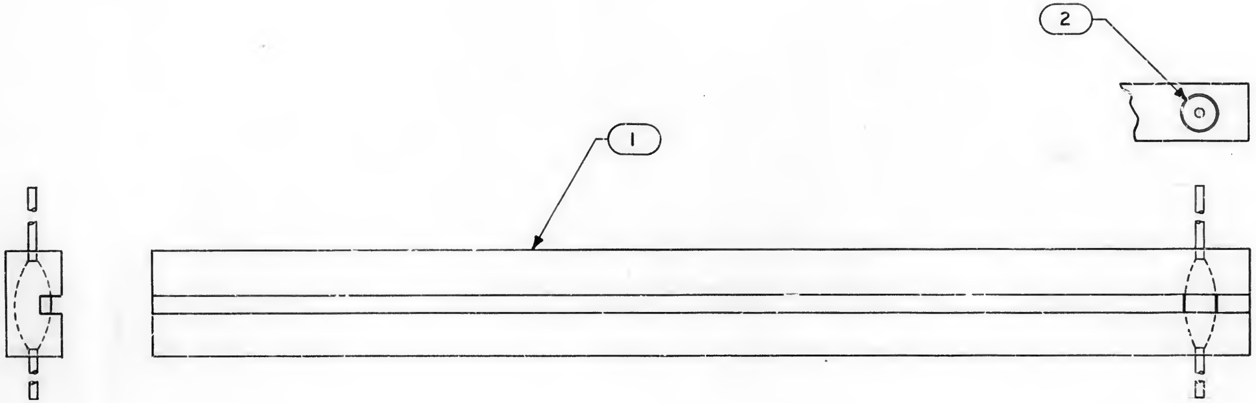
SUB-ASSEMBLY,
CONNECTOR, COMPUTER END

CODE IDENT NO ——— SIZE E NASA DRAWING NO 1003181
SCALE 1/1 WT SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 04147

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06225	2/11/68	erk WK



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE FIND NO. 2 PER ND1002009

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1006750-62	RESISTOR,	2
1	1004270	BLOCK, SPACER	1

LIST OF MATERIALS

1003167	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

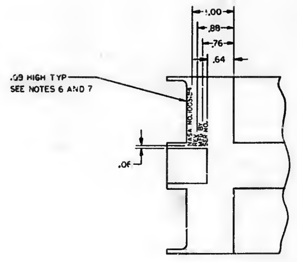
DRAWN R. Butler DATE 20 Oct 63
CHECKED
APPROVAL 21 OCT 63
APPROVAL
NASA APPROVAL 10/24/63
MIT APPROVAL 24 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

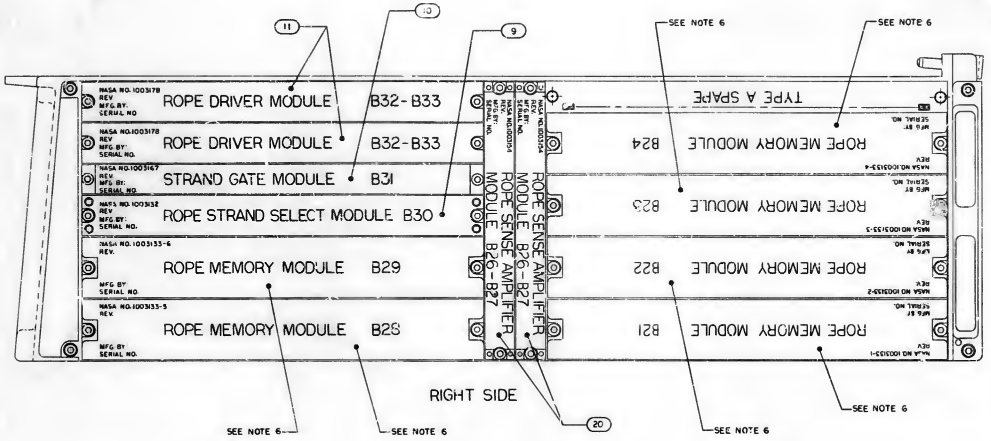
BLOCK SPACER SUB-ASSY
STRAND GATE MODULE

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1003182
SCALE 4/1
WT
SHEET 1 OF 1

MASTER

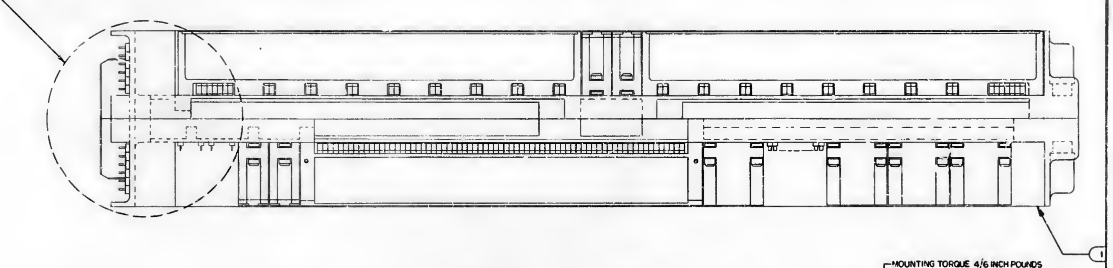


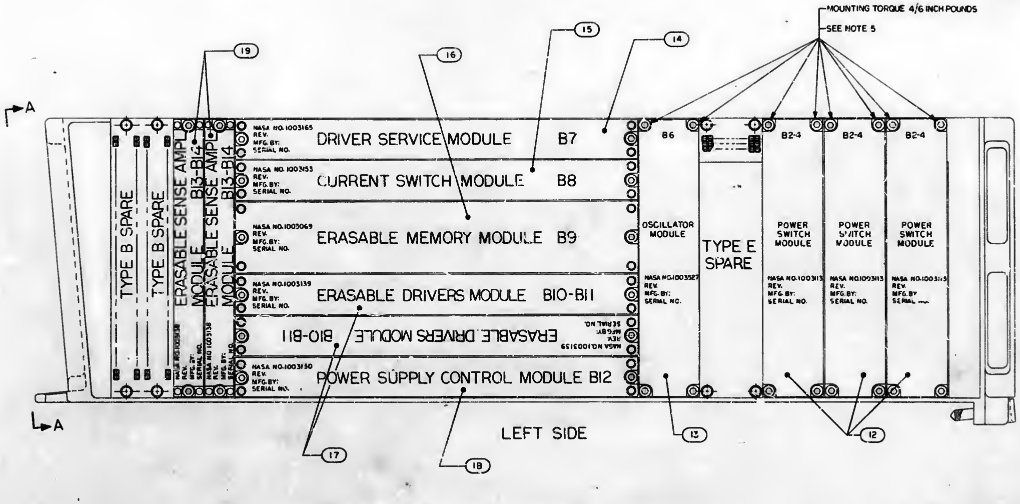
MARKING VIEW



RIGHT SIDE

SEE MARKING VIEW

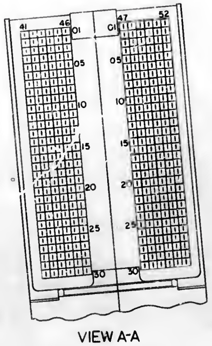




LEFT SIDE

NOTES:

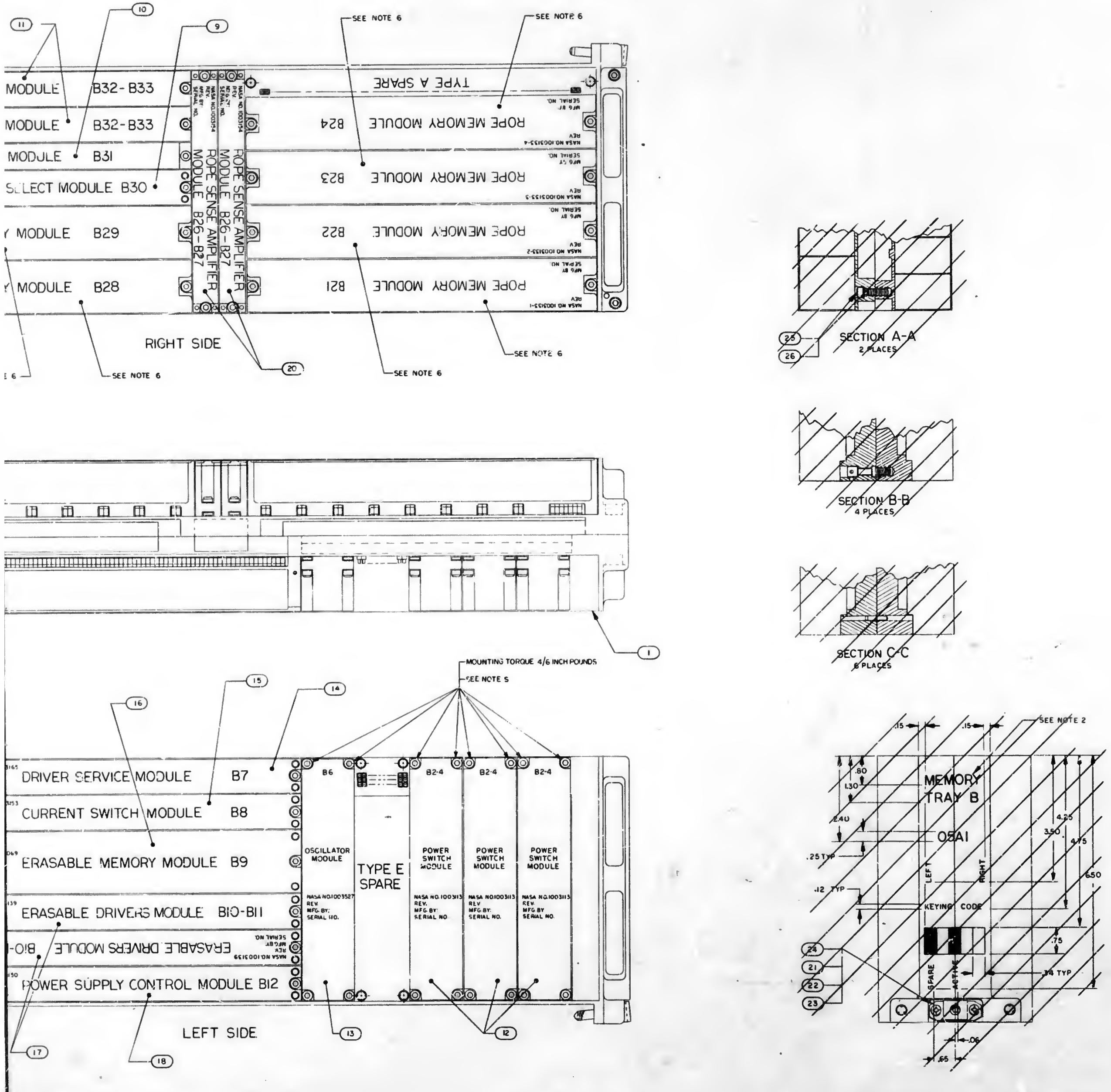
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARKING AND LETTERING WHITE PER NO 1002019 AND NO 1002122, TYPE II, CLASS I
3. ~~PAINT ALL MATING SURFACES WITH 1006879~~
4. AR DENOTES AS REQUIRED
5. UNLESS OTHERWISE SPECIFIED TORQUE ALL MODULE MOUNTING & TRAY HALF RETAINING SCREWS 15/19 INCH POUNDS
6. ROPE MODULES ARE SHOWN FOR REFERENCE ONLY
7. SERIALIZE PER NO 1002023



VIEW A-A

1003184 C

1003184	C		
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 07344 DRG Wheeler CHK	3/3/61	
B	INACTIVE PER TDRR 10889 DR CHK Q.P.B.	7/7/64	
C	REVISED PER TDRR 11494 DR CHK		

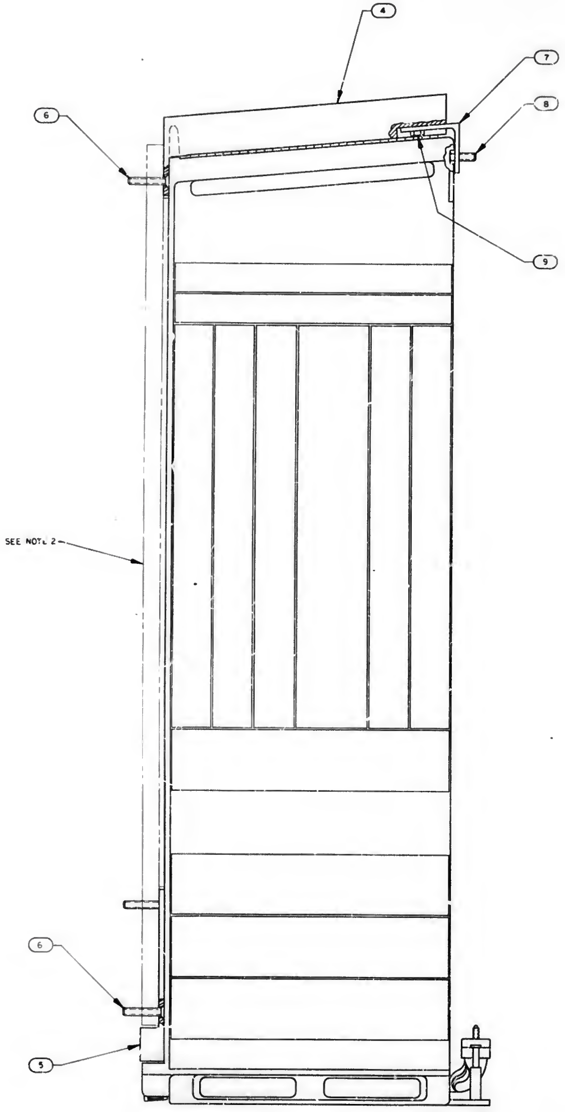


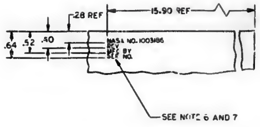
INACTIVE AFTER SYSTEM NO 7
FOR NEW PROCUREMENT USE
1003465

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
~~4~~	~~1004546-3~~	~~WASHER, FLAT~~	~~26~~
~~2~~	~~1004230~~	~~SCREW~~	~~25~~
~~1~~	~~1004372~~	~~PLATE, [illegible]~~	~~24~~
~~2~~	~~[illegible]~~	~~SCREW, MACHINE PAN HD~~	~~23~~
~~1~~	~~1004281~~	~~SCREW, JACK~~	~~22~~
~~1~~	~~1004254~~	~~RETAINER, JACKSCREW~~	~~21~~
2	1003154	ROPE SENSE AMPLIFIER MODULE	20
2	1003138	ERASABLE SENSE AMPL MODULE	19
1	1003150	POWER SUPPLY CONTROL MODULE	18
2	1003139	ERASABLE DRIVER MODULE	17
1	1003069	ERASABLE MEMORY MODULE	16
1	1003153	CURRENT SWITCH MODULE	15
1	1003165	DRIVER SERVICE MODULE	14
1	1003527	OSCILLATOR MODULE	13
3	1003113	POWER SWITCH MODULE	12
2	1003178	ROPE DRIVER MODULE	11
1	1003167	STRAND GATE MODULE	10
1	1003132	ROPE STRAND SELECT MODULE	9
~~1~~	~~1003133-1~~	~~ROPE MEMORY MODULE~~	~~8~~
~~1~~	~~1003133-6~~	~~ROPE MEMORY MODULE~~	~~7~~
~~1~~	~~1003133-5~~	~~ROPE MEMORY MODULE~~	~~6~~
~~1~~	~~1003133-4~~	~~ROPE MEMORY MODULE~~	~~5~~
~~1~~	~~1003133-3~~	~~ROPE MEMORY MODULE~~	~~4~~
~~1~~	~~1003133-2~~	~~ROPE MEMORY MODULE~~	~~3~~
~~1~~	~~1003177~~	~~TRAY B WIRED ASSEMBLY RIGHT HAND~~	~~2~~
1	1003455	TRAY B WIRED ASSEMBLY	1

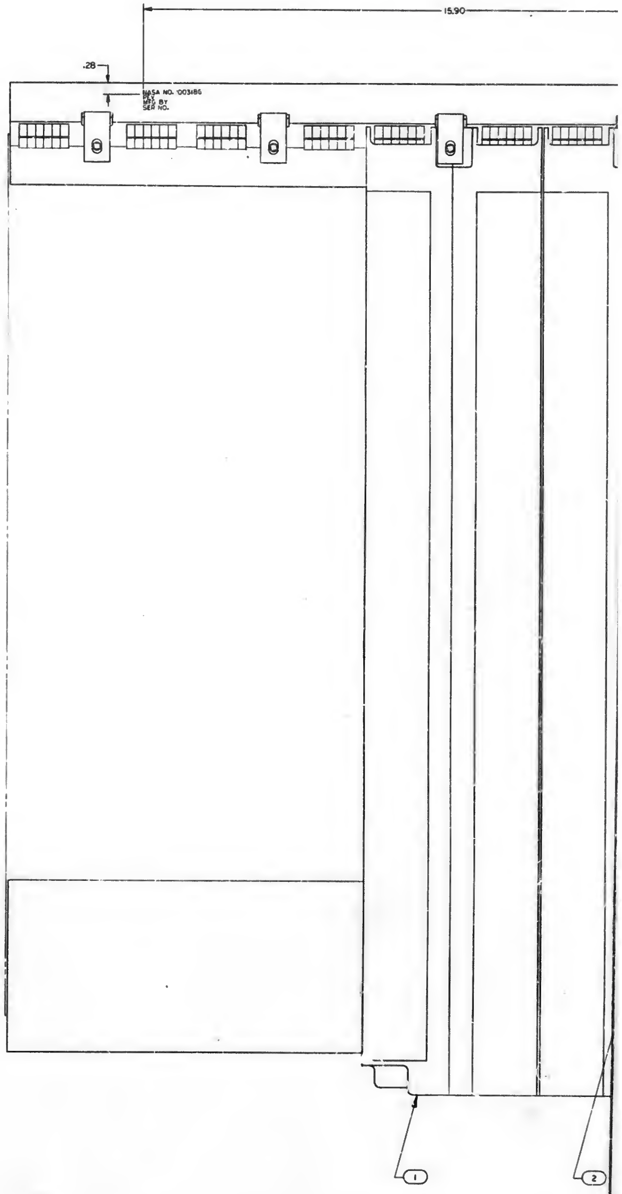
LIST OF MATERIALS

1003186		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS .XX ± .02 ANGLES ± DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINAL FINISH	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DRAWN DATE CHECKED APPROVAL APPROVAL NASA APPROVAL MIT APPROVAL	MANNED SPACECRAFT CENTER HOUSTON, TEXAS MEMORY TRAY B ASSEMBLY CODE IDENT NO. — SIZE J NASA DRAWING NO 1003184 SCALE 1/1 WT SHEET 1 OF 1
NEXT ASSY	USED ON			
APPLICATION				





MARKING VIEW

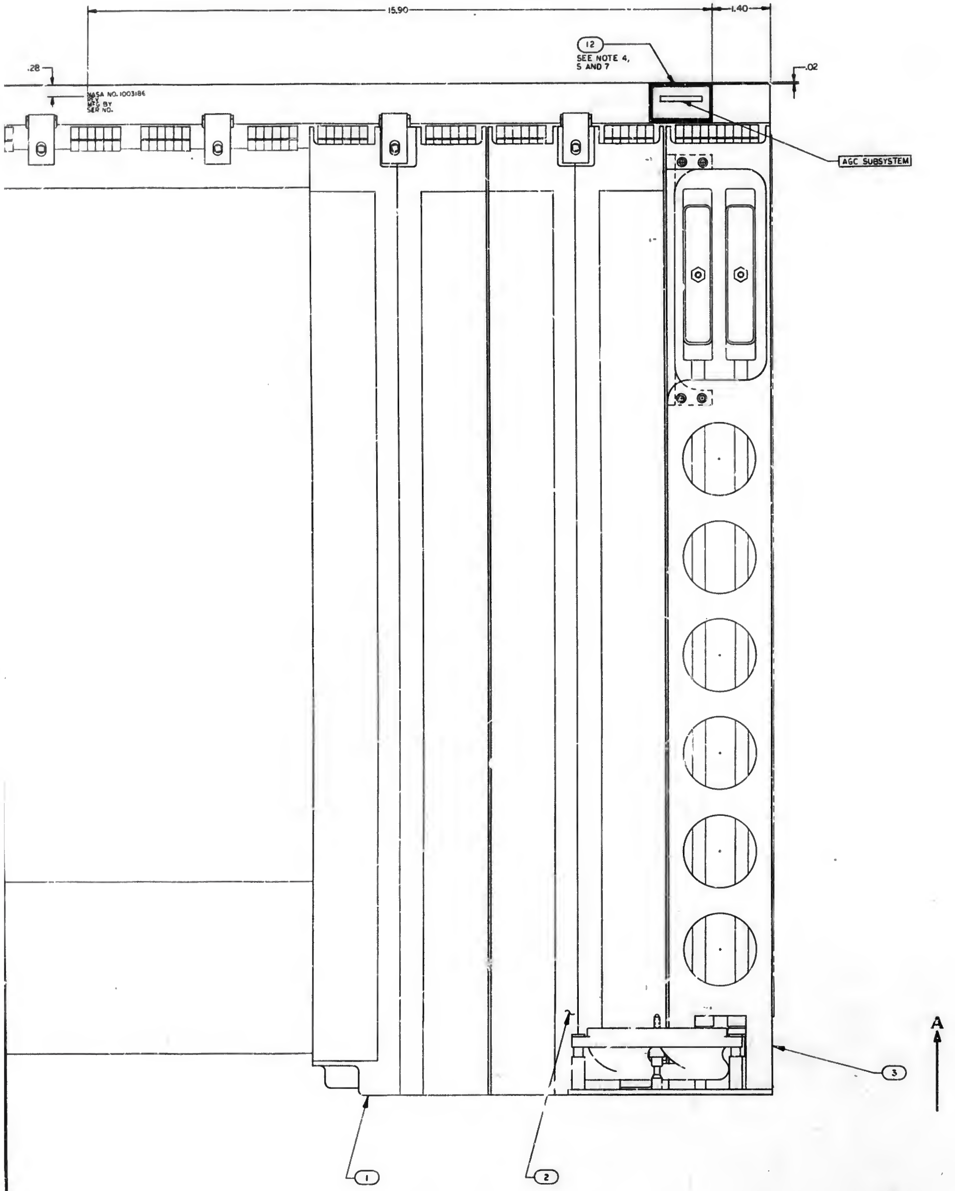


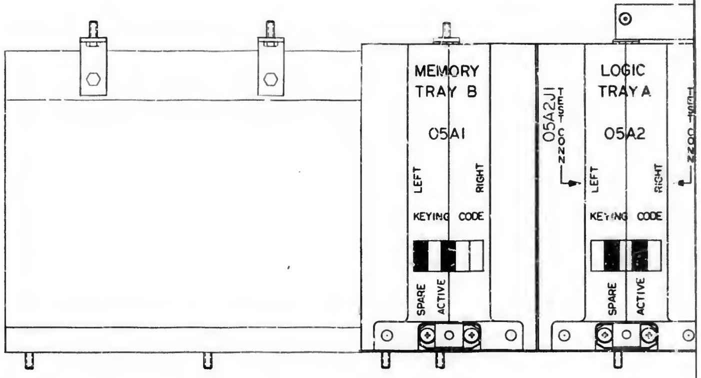
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. PHANTOM LINES DENOTE AGC COLDPLATE TO BE SUPPLIED BY NORTH AMERICAN AVIATION, INC REF PART NO. V16-614046-21X
3. FIND NO. 6, 8, 9, 10 AND 11 ARE TO BE SUPPLIED AND IDENTIFIED PER ND 1002019
4. BOND FIND NO. 12 TO FIND NO. 4 USING MIL-A-5092 TYPE II
5. FIND NO. 12 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 AND ASSOCIATED DASH NO.
6. MARK .09 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I APPROX AS SHOWN
7. SERIALIZE PER ND1002023

REFERENCE
1. 1020107 AGC TO HANDLING FIXTURE ASSY

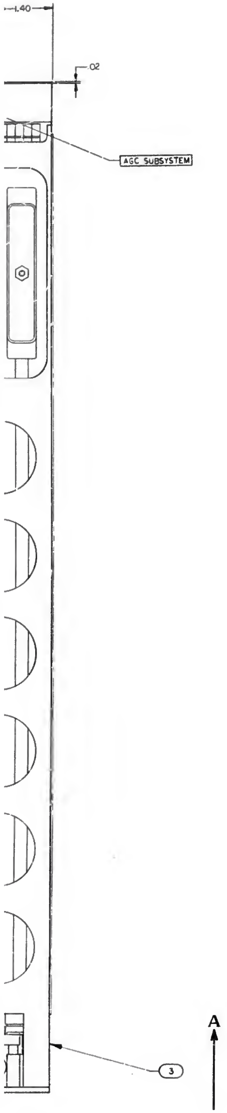
1003186	E

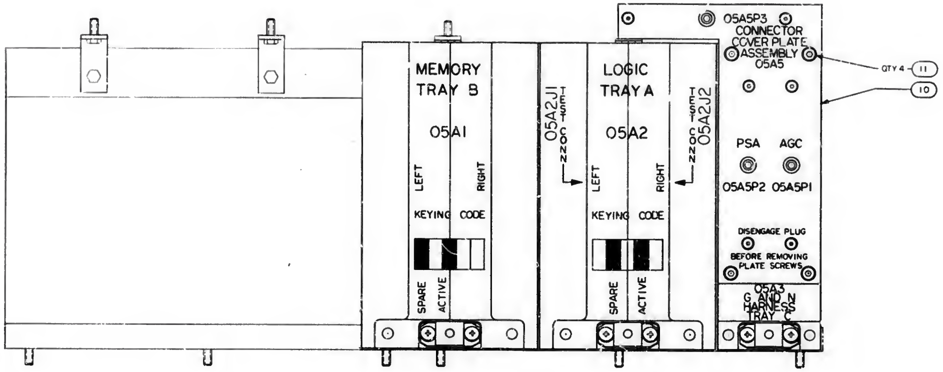

15.90
1.40
.28
.02
12
SEE NOTE 4, 5 AND 7
NASA NO. 1003186
REV
MFG BY
SER NO.
AGC SUBSYSTEM
A
1
2
3


MEMORY
TRAY B
05A1
LEFT
RIGHT
KEYING CODE
SPARE
ACTIVE
05A2J1
TEST CONN
LOGIC
TRAY A
05A2
LEFT
RIGHT
KEYING CODE
SPARE
ACTIVE

VIEW **A-A**

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 06223	[illegible]	[illegible]
B	REVISED PER TDRR 07643 DR DAM CHK CM	4/3/64	HuC
C	REVISED PER TDRR 10128 DR R.D.V.S. CHK R.H.E	6/19/64	HuC
D	INACTIVE PER TDRR 10889 DR R.W.D. CHK R.R.S.	7/2/64	HuC
E	REVISED PER TDRR 11494 DR J.E. CHK CM	9/21/64	HuC





VIEW A-A

INACTIVE AFTER SYSTEM NO.7
FOR NEW PROCURMENT USE 1003469

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1	1004657	PLATE, IDENTIFICATION	12
SEE NOTE 3	4	1010630-38	SCREW, FLAT	11
SEE NOTE 3	1	1003457	CONNECTOR COVER PLATE ASSY	10
SEE NOTE 3	4	AN104608	SCREW, HEX HD	9
SEE NOTE 3	4	AN104606	SCREW, HEX HD	8
	4	1004272	BRACKET, UPPER BRACE	7
SEE NOTE 3	14	1010630-58	SCREW, FLAT HD, HEX SOC	6
	1	1003180	PLATE, TOE	5
	1	1003189	CONNECTOR, COMPUTER END, ASSY	4
	1	1003197	G AND N HARNESS TRAY ASSY	3
	1	1003187	LOGIC TRAY A ASSY	2
	1	1003184	MEMORY TRAY B ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003400	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

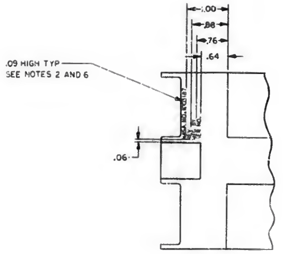
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN C.B. Bently DATE 11-5-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

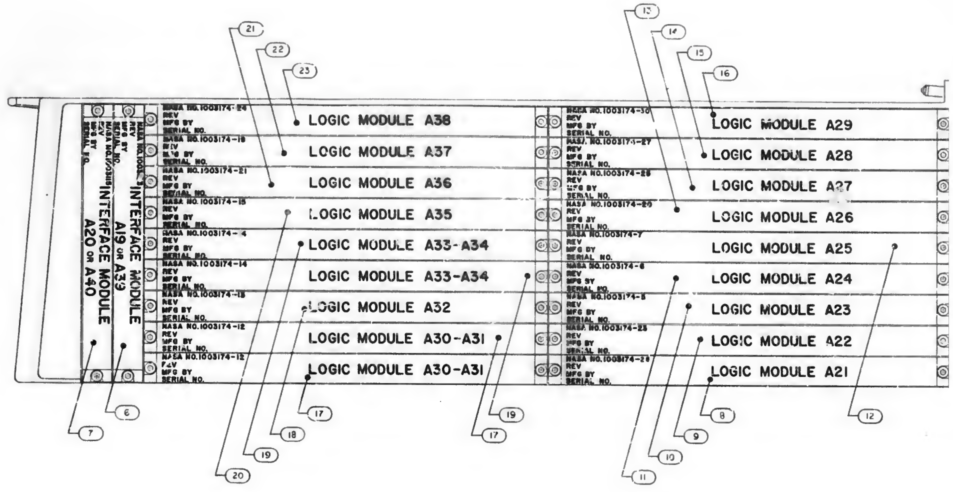
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

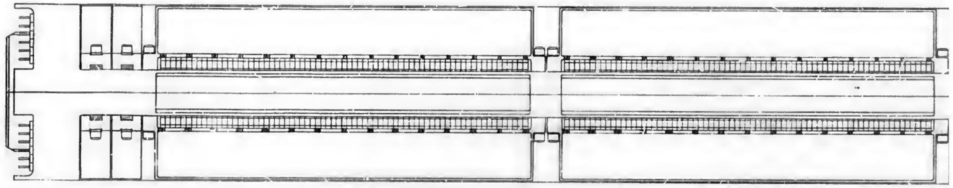
AGC ASSEMBLY

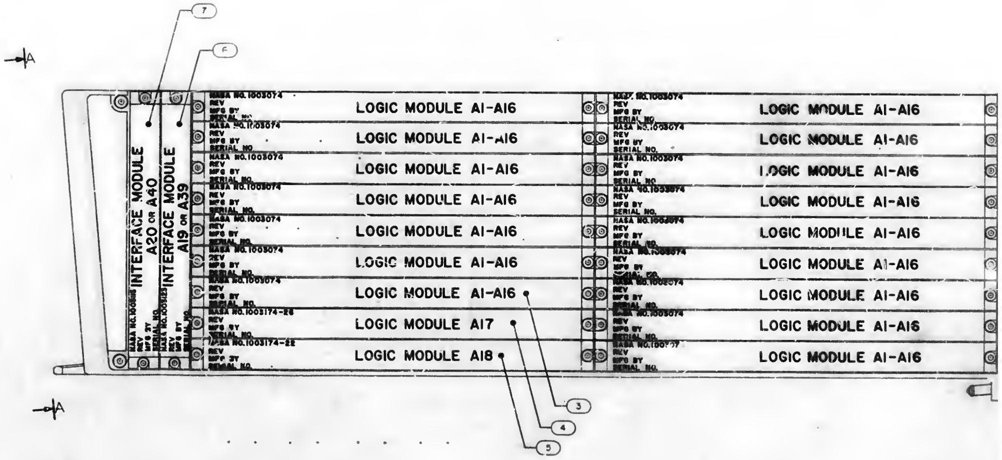
CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003186
SCALE 1/1
WT
SHEET



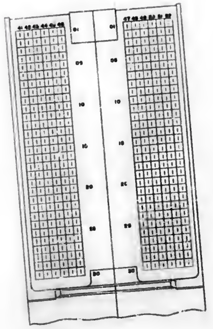
MARKING VIEW







NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2 MARKING AND LETTERING WHITE PER N01002019 AND N01002122 TYPE II, CLASS I
3 ~~COAT ALL MATING SURFACES WITH 1006879~~
4 ~~[illegible] AS REQUIRED~~
5 TORQUE ALL MODULE MOUNTING SCREWS 15 TO 19 INCH POUNDS
6. SERIALIZE PER N01002023



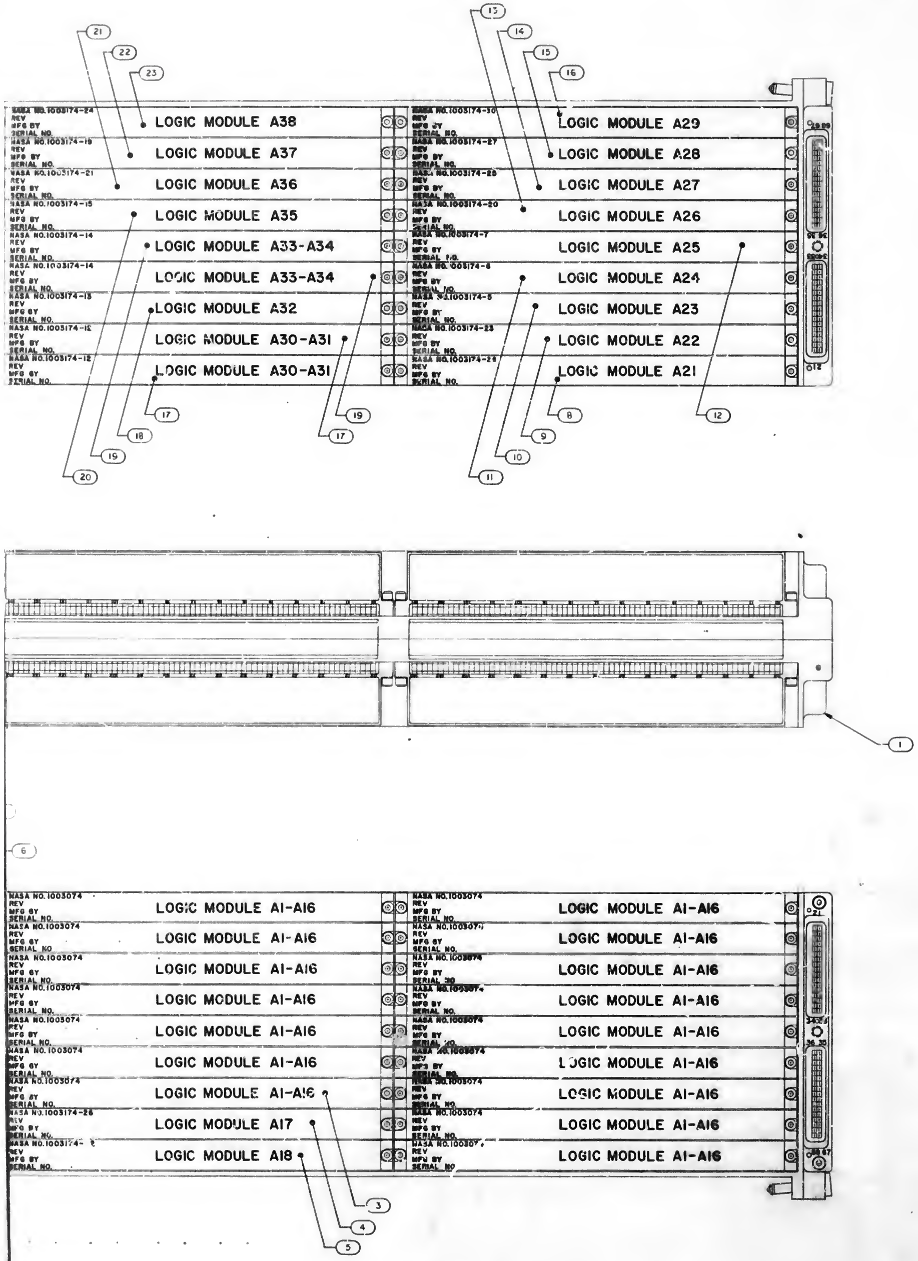
VIEW A-A

1003187 B

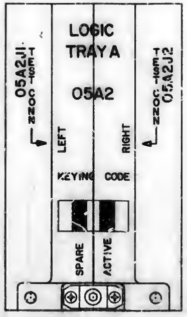
B	1003187

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 07502 DR [illegible] CHK [illegible]	4/12/65	HWC
B	REVISED PER TDRR 11493 DR [illegible] CHK [illegible] ATM	8/31/65	HWC



21
22
23
13
14
15
16
NASA NO. 1003174-24 REV MFG BY SERIAL NO.
LOGIC MODULE A38
NASA NO. 1003174-19 REV MFG BY SERIAL NO.
LOGIC MODULE A37
NASA NO. 1003174-21 REV MFG BY SERIAL NO.
LOGIC MODULE A36
NASA NO. 1003174-15 REV MFG BY SERIAL NO.
LOGIC MODULE A35
NASA NO. 1003174-14 REV MFG BY SERIAL NO.
LOGIC MODULE A33-A34
NASA NO. 1003174-14 REV MFG BY SERIAL NO.
LOGIC MODULE A33-A34
NASA NO. 1003174-13 REV MFG BY SERIAL NO.
LOGIC MODULE A32
NASA NO. 1003174-12 REV MFG BY SERIAL NO.
LOGIC MODULE A30-A31
NASA NO. 1003174-12 REV MFG BY SERIAL NO.
LOGIC MODULE A30-A31
NASA NO. 1003174-30 REV MFG BY SERIAL NO.
LOGIC MODULE A29
NASA NO. 1003174-27 REV MFG BY SERIAL NO.
LOGIC MODULE A28
NASA NO. 1003174-25 REV MFG BY SERIAL NO.
LOGIC MODULE A27
NASA NO. 1003174-20 REV MFG BY SERIAL NO.
LOGIC MODULE A26
NASA NO. 1003174-7 REV MFG BY SERIAL NO.
LOGIC MODULE A25
NASA NO. 1003174-6 REV MFG BY SERIAL NO.
LOGIC MODULE A24
NASA NO. 1003174-5 REV MFG BY SERIAL NO.
LOGIC MODULE A23
NASA NO. 1003174-23 REV MFG BY SERIAL NO.
LOGIC MODULE A22
NASA NO. 1003174-28 REV MFG BY SERIAL NO.
LOGIC MODULE A21
17
19
18
17
20
19
11
10
9
8
12
1
6
NASA NO. 1003074 REV MFG BY SERIAL NO.
LOGIC MODULE A1-A16
LOGIC MODULE A17
NASA NO. 1003174-26
LOGIC MODULE A18
NASA NO. 1003174-22
3
4
5



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1003104	OUTLINE DRAWING	REF
~~3~~	~~1004261~~	~~SCREW, JACK~~	~~26~~
~~3~~	~~1004254~~	~~RETAINER, JACK SCREW~~	~~25~~
~~3~~	~~1004287~~	~~PLATE, BACKING~~	~~24~~
1	1003174-24	LOGIC MODULE A38	23
1	1003174-19	LOGIC MODULE A37	22
1	1003174-21	LOGIC MODULE A36	21
1	1003174-15	LOGIC MODULE A35	20
2	1003174-14	LOGIC MODULE A33-A34	19
1	1003174-13	LOGIC MODULE A32	18
2	1003174-12	LOGIC MODULE A30-A31	17
1	1003174-30	LOGIC MODULE A29	16
1	1003174-27	LOGIC MODULE A28	15
1	1003174-25	LOGIC MODULE A27	14
1	1003174-20	LOGIC MODULE A26	13
1	1003174-7	LOGIC MODULE A25	12
1	1003174-6	LOGIC MODULE A24	11
1	1003174-5	LOGIC MODULE A23	10
1	1003174-23	LOGIC MODULE A22	9
1	1003174-28	LOGIC MODULE A21	8
2	1003115	INTERFACE MODULE A20 OR A40	7
2	1003123	INTERFACE MODULE A19 OR A39	6
1	1003174-22	LOGIC MODULE A18	5
1	1003174-26	LOGIC MODULE A17	4
16	1003074	LOGIC MODULE A1-A16	3
~~2~~	~~[illegible]~~	~~SCREW, MACHINE PAN HD~~	~~2~~
1	1003200	TRAY A WIRED ASSEMBLY	1

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY	USED ON
1003186	

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS.

DRAWN Ed Pimentel DATE [illegible]
CHECKED [illegible]
APPROVAL
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LOGIC TRAY A
ASSEMBLY

CODE IDENT NO ——— SIZE J NASA DRAWING NO. 1003187
SCALE 1/1 WT SHEET 1 OF 1

1003187	B

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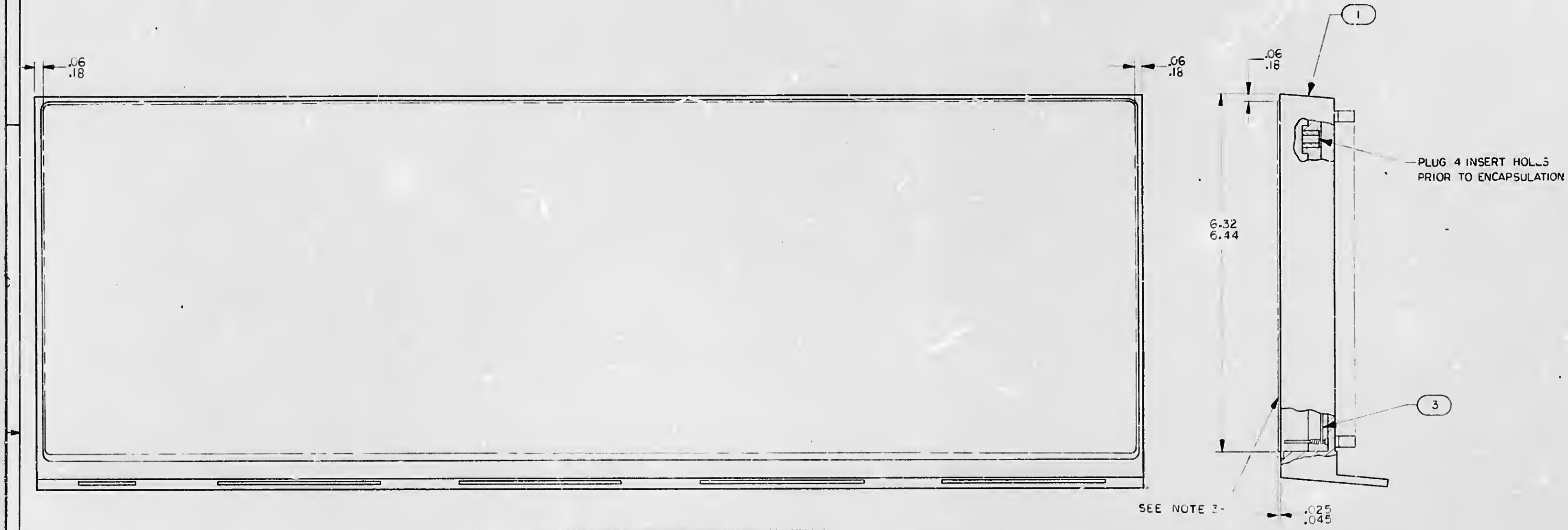
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06141		WK
B	REVISED PER TDRR 07342 DR C Hopin CHK		
C	REVISED PER TDRR 08102 DR CHK		



POWER AND GROUND CONFIGURATION						
SIGNAL	FROM	TO	FROM	TO	FROM	TO
+3MX	B/4605	B/4705				
+3MY	B/4606	B/4706				
+3MZ	B/4607	B/4707				
+3A	A/4804	B/4804				
	B/4604	B/4704				
	A/4504	B/4904				
+3B	A/4801	B/4801	A/4501	B/4901		
	A/4802	B/4802	A/4502	B/4902		
	A/4803	B/4803	A/4503	B/4903		
+28 COM	B/4608	B/4609	B/4708	B/4709		
	B/4609	B/4708	B/4608	J-4206		
MEMORY INTERFACE GROUNDS	B/4602	A/4701	A/4601	B/5005		
	B/4601	A/4702	A/4602	B/5006		
	B/4603	A/4502	B/5212	A/4703		
	A/4601	B/5206	A/4701	B/5211		
	A/4703	B/5106				
OVDC	B/4501 ⑦	B/5203	A/4701	B/5104		
	B/5202	B/5204	B/4701	B/5101		
	A/4603	B/5204	B/5101	B/5104		
	A/4603	B/4703	B/4703	B/5103		
	A/4603	B/5202	B/4702	B/5102		
	A/4702	B/5105	B/5102	B/5105		
	A/4601	B/4701	A/4602	B/4702		
28VA	B/5001 ⑥	J-4201	B/5002 ⑧	J-4301	B/5001	B/5002
28VB	B/5003 ⑥	J-4901	B/5004 ⑧	J-5001	B/5003	B/5004
28V RETURN	B/5201 ⑥	J-4401	B/5205 ⑧	J-4501	B/5201	B/5205
	J-4501	J-4701	J-4401	J-4701	J-4501	J-4801
	J-4401	J-4801				
B PLUS A	B/4610	B/4805	B/4905	A/4604		
B PLUS B	A/4704	B/4806				

SIGNAL	FROM	TO	FROM	TO	FROM	TO
SHIELD GROUNDS	J-4609	J-4615	J-4125	J-4128	J-4615	J-4619
	J-4128	A/4703	J-4619	J-4125		
TWISTED PAIR RETURN AND DSKY GROUNDS	J-4611	J-4203	J-4619	J-4620	J-4203	J-4202
	J-4620	A/4702	J-4202	J-4618		
13 DSKY	B/4808	J-4205				
V FAIL	B/4213	B/4813				
3 DSKY	B/4906	J-4204				

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIREWRAP PER ND1002031 USING 1006169
3. ENCAPSULATE PER ND 1002217
4. ~~BOND FIND 2 TO FIND 1 PER ND1002004~~
5. AR DENOTES AS REQUIRED
6. RUNS DENOTED BY ⑥ IN CHART TO BE TWISTED APPROXIMATELY ONE-HALF TURN PER INCH, 3 WIRES, 1 PLACE
7. RUN DENOTED BY ⑦ IN CHART TO BE MADE USING 2 WIRES (FIND NO. 3) FROM B/4501 AND B/5203
8. RUNS DENOTED BY ⑧ IN CHART TO BE TWISTED APPROXIMATELY ONE-HALF TURN PER INCH, 3 WIRES, 1 PLACE

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006945	WIRE, ELEC NO. 24 AWG	3
~~1~~	~~1004273~~	~~PIN IDENT BOARD, COMPUTER END~~	~~2~~
1	1003181	SUB-ASSEMBLY, CONN, COMPUTER END	1

LIST OF MATERIALS

1003186	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

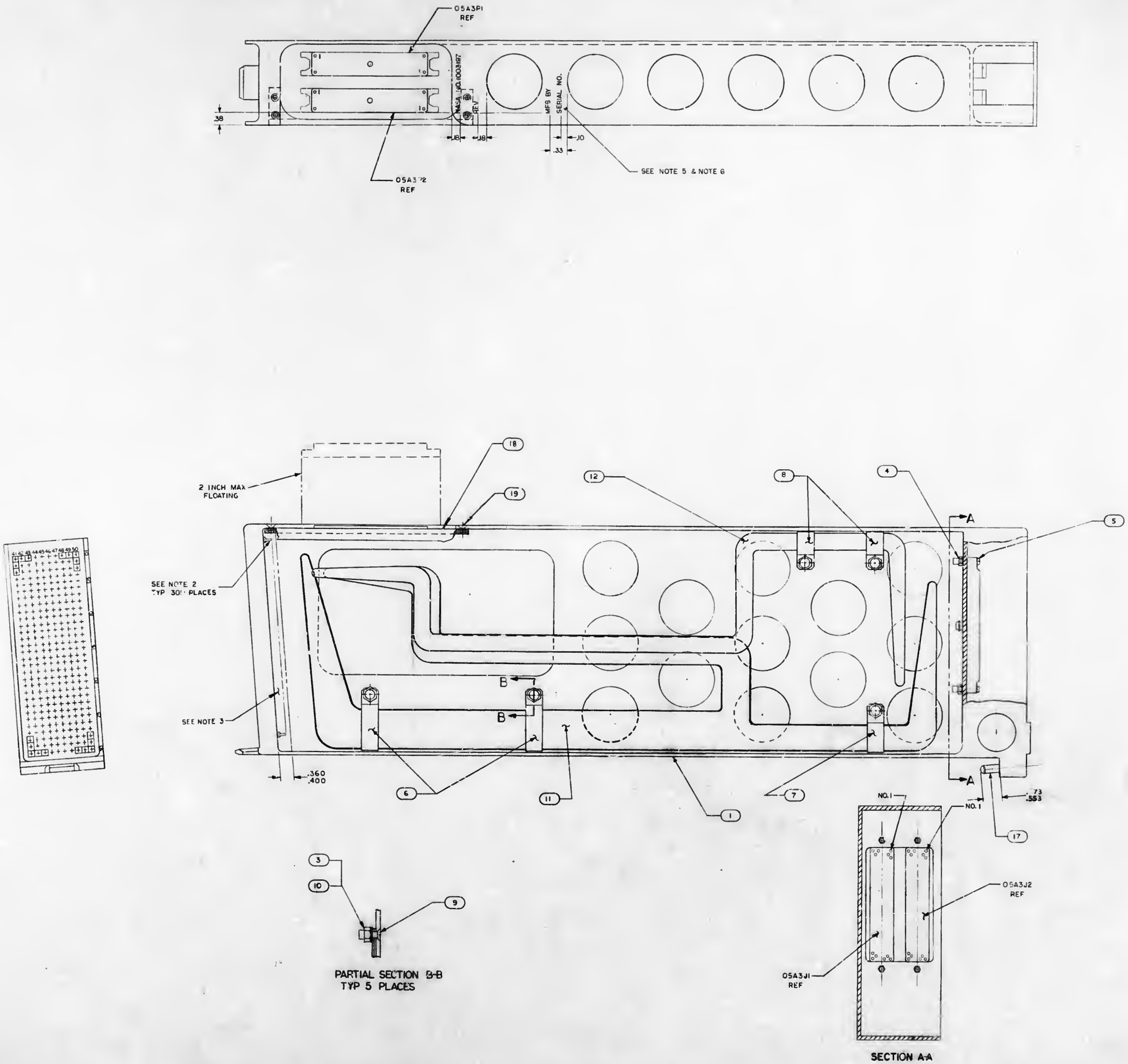
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN C.A. Preston DATE 11-14-63
CHECKED 14 Nov 63
APPROVAL
APPROVAL 11-22-63
NASA APPROVAL
MIT APPROVAL WKeffer 26Nov63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY,
CONNECTOR, COMPUTER END

CODE IDENT NO ——
SIZE D
NASA DRAWING NO 1003189
SCALE 1/1
SHEET 1 OF 1



PARTIAL SECTION B-B
TYP 5 PLACES

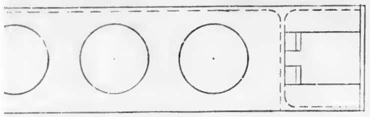
SECTION A-A

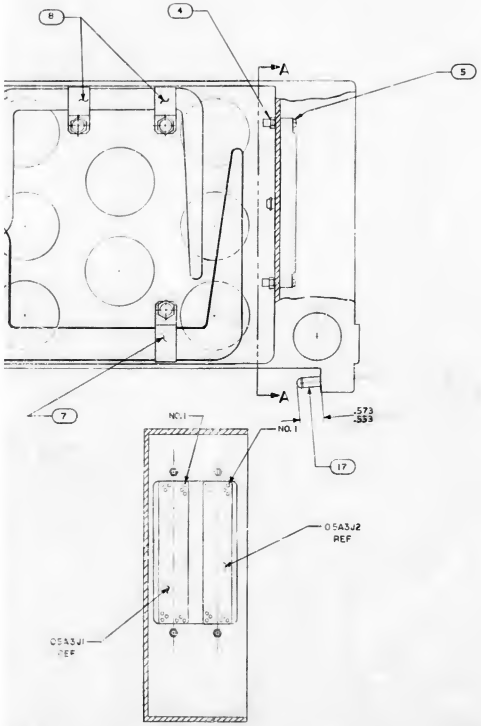
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL SOLDERING CONNECTIONS TO BE MADE PER MIL-S-6872 USING SOLDER PER QQ-S-571 SN60
3. ENCAPSULATE INDICATED AREA PER ND 1002217
4. MARK .38 HIGH AS SHOWN, BLACK PER ND 1002019 AND ND 1002122 TYPE II, CLASS 2, USING MARKING INK DWG NO. 1006271-1
5. MARK .25 HIGH AS SHOWN, WHITE PER ND 1002019 AND ND 1002122 TYPE II, CLASS 2, USING MARKING INK DWG NO. 1006271-1
6. SERIALIZE PER ND 1002023
7. SELECT FIND NO. 6 FROM 1015985-017 THRU -020
8. SELECT FIND NO. 7 & 8 FROM 1015985-007 THRU -013

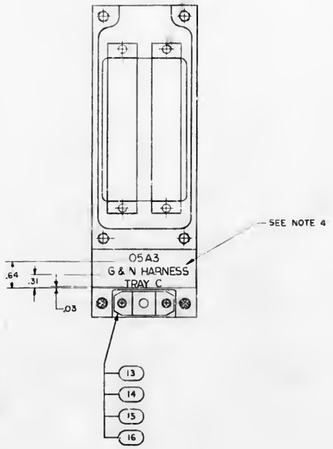
1003197 F

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06223		
B	REVISED PER TDRR 07643 DR CHK	4/4/64	
C	REVISED PER TDRR 10128 DR CHK R.H.E.	9/30/64	
D	REVISED PER TDRR 10697 RTM DR CHK A.R.B.		
E	REVISED PER TDRR 11490 DR CHK RTM	9/13/64	
F	REVISED PER TDRR 13120 DR CHK RTM		





SECTION A-A



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1010477-13	SCREW, FLAT HD, 100°C, SELF LOCKING	19
1	1004634	STIFFENER	18
2	1010620-3	PIN, GUIDE	17
2	NAS1402-2	SCREW, MACHINE, PAN HEAD	16
1	1004261	SCREW, JACK	15
1	1004254	RETAINER, JACKSCREW	14
1	1004262	PLATE, BACKING	13
1	1003198	"B" HARNESS	12
1	1003199	"A" HARNESS	11
5	1006279-7	NUT, HEX, CAPPED, SELF LOCKING	10
5	MS35201-56	SCREW, MACHINE, FLAT HEAD	9
2	SEE NOTE 8	CLAMP, LOOP, NYLON	8
1	SEE NOTE 8	CLAMP, LOOP, NYLON	7
2	SEE NOTE 7	CLAMP, LOOP, NYLON	6
4	MS35216-16	SCREW, MACHINE, PAN HEAD	5
4	1006279-1	NUT, HEX, CAPPED, SELF LOCKING	4
5	NAS1515H-3L	WASHER, NYLON	3
~~[illegible]~~	~~[illegible]~~	~~[illegible] COVER PLATE ASSEMBLY~~	~~2~~
1	1003196	G AND N HARNESS TRAY SUBASSEMBLY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003477	
1003489	
1003186	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

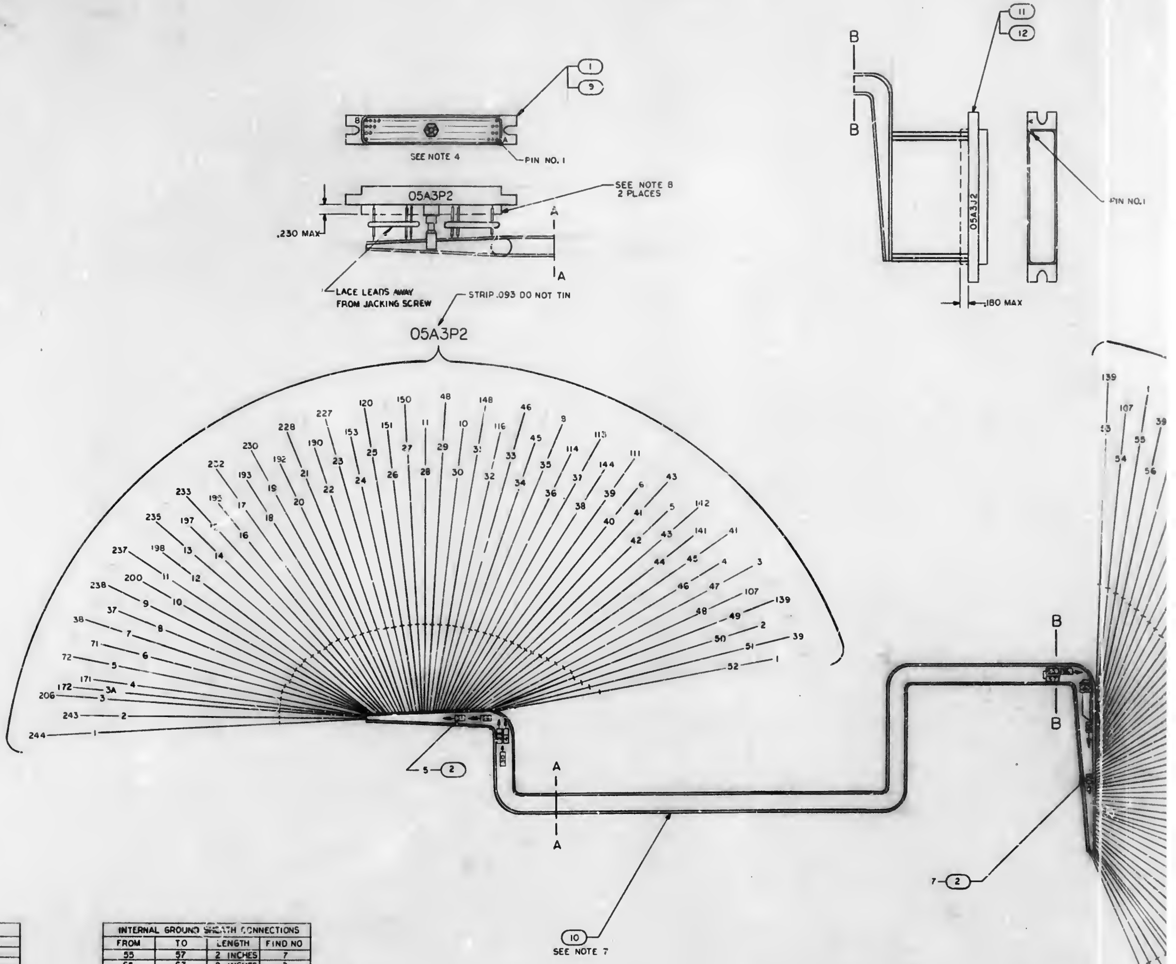
G AND N HARNESS TRAY ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003197
SCALE 1/1
SHEET 1 OF 1

1003197 F

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	52	WHITE	26	3	55	SEE NOTE 3
	51	RED	26		56	
ATTACH FIND NO.7 LG 3 1/2	50	SHIELD				
	47	WHITE	26		57	SEE NOTE 3
	46	RED	26		56	
ATTACH FIND NO.7 LG 3 1/2	45	SHIELD			58	ATTACH FIND NO.7 LG 4 1/2
	40	WHITE	26		65	SEE NOTE 3
	41	RED	26		66	
ATTACH FIND NO.7 LG 3 1/2	42	SHIELD				
	34	WHITE	26		67	SEE NOTE 3
	33	RED	26		66	
ATTACH FIND NO.7 LG 3 1/2	35	SHIELD			64	ATTACH FIND NO.7 LG 4 1/2
	29	WHITE	26		73	SEE NOTE 3
	30	RED	26		72	
ATTACH FIND NO.7 LG 3 1/2	28	SHIELD		3	71	ATTACH FIND NO.7 LG 4 1/2
SEE TWIST CHART	49	WHITE	26	4	53	SEE TWIST CHART
	48	RED		5	54	
	44	WHITE		4	59	
	43	RED		5	60	
	38	WHITE		4	63	
	39	RED		5	62	
	37	WHITE		4	68	
	36	RED		5	69	
	32	WHITE		4	61	
	31	RED		5	70	
	27	WHITE		4	74	
	26	RED		5	75	
	24	WHITE		4	77	
	25	RED		5	76	
	7	WHITE		4	96	
	8	RED		5	95	
	5	WHITE		4	94	
	6	RED		5	93	
	17	BLUE		6	84	
	16	RED		5	85	
	15	WHITE		4	86	
	14	BLUE		6	87	
	13	RED		5	88	
	12	WHITE		4	89	
	9	BLUE		6	92	
	11	RED		5	90	
	10	WHITE		4	91	
	23	BLUE		6	78	
	22	RED		5	79	
	21	WHITE		4	80	
	20	BLUE		6	81	
	19	RED		5	82	
	18	WHITE		4	83	
	3	RED		5	98	
	1	WHITE		4	100	
	2	BLUE		6	99	
	4	BLACK		7	97	
	3A	WHITE	26	4	96A	



TWIST CHART
25-76 WITH 24-77
49-53 WITH 48-54
44-59 WITH 43-60
39-62 WITH 38-63
37-68 WITH 36-69
32-61 WITH 31-70
27-74 WITH 26-75
8-95 WITH 7-96
5-94 WITH 6-93
23-78 WITH 21-80 AND 22-79
18-83 WITH 20-81 AND 19-82
15-86 WITH 17-84 AND 16-85
12-89 WITH 14-87 AND 13-88
11-90 WITH 9-92 AND 10-91
3-98 WITH 1-100 AND 2-99 AND 4-97

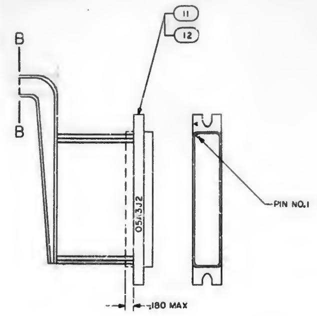
INTERNAL GROUND SHEATH CONNECTIONS

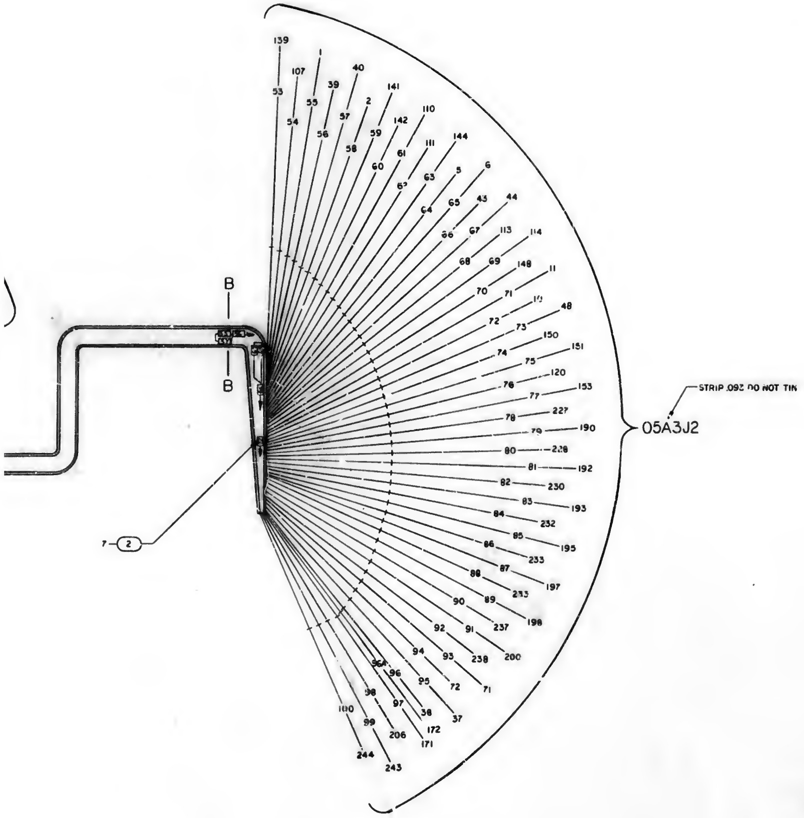
FROM	TO	LENGTH	FIND NO
55	57	2 INCHES	7
65	67	2 INCHES	7

NOTES

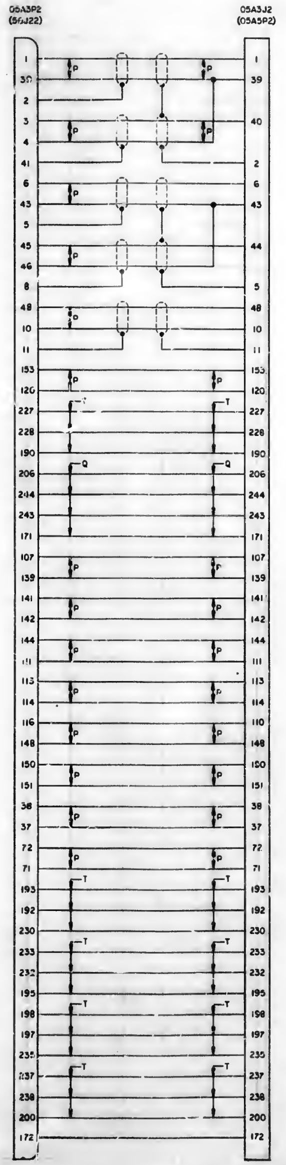
1. INTERPRET DRAWING PER STANDARDS PRESCRIBED BY MIL-D-70327
2. FOR SYMBOLS, FABRICATION AND REQUIRED TESTS SEE ND 1002032
3. FOR INTERCONNECTING OF GROUND SHEATH CONNECTIONS, SEE INTERNAL GROUND SHEATH CONNECTION CHART
4. INSTALL CRIMP STYLE TERMINALS IN ACCORDANCE WITH ND 10022[illegible]6
5. * DENOTES LENGTH IN FEET
6. AR DENOTES AS REQUIRED
7. MARK .06 HIGH BLACK PER ND 1002019
8. ENCAPSULATE INDICATED AREA PER ND 1002[illegible]09 METHOD E, MOUNTING SURFACES OF CONNECTORS MUST NOT BE ENCAPSULATED

LTR	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TORR		
B	REVISED PER TORR DR CHK R.P.B.	4/14/64	HC
C	REVISED PER TORR 10128 DR CHK		HC





ELECTRICAL SCHEMATIC



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1006181	WIRING DIAGRAM	REF
244	1010738-2	CONTACT, ELEC, SOCKET	12
1	1010642-244	CONNECTOR, RECEPTACLE	11
1	1011472-	BAND MARKER CABLE	10
244	1010733-1	CONTACT, ELEC PIN	9
AR	MIL-T-713, TYPE P CL 2	LACING, WAXED	8
* 2.5	1010685-13	WIRE, ELEC, AWG 26 BLACK	7
* [illegible]	1010665-12	WIRE, ELEC, AWG 26 BLUE	6
* 38.5	1010685-10	WIRE, ELEC, AWG 26 RED	5
* 38.5	1010685-11	WIRE, ELEC, AWG 26 WHITE	4
* 38.5	1010685-8	WIRE, ELEC, AWG 26 2 COND SHIELDED	3
12	1010402-1	SLEEVE, SOLDER, ELECTRICAL	2
1	1010641-244	CONNECTOR, PLUG ELECTRICAL	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003197	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS * DECIMALS * ANGLES *
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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CHECKED
APPROVAL
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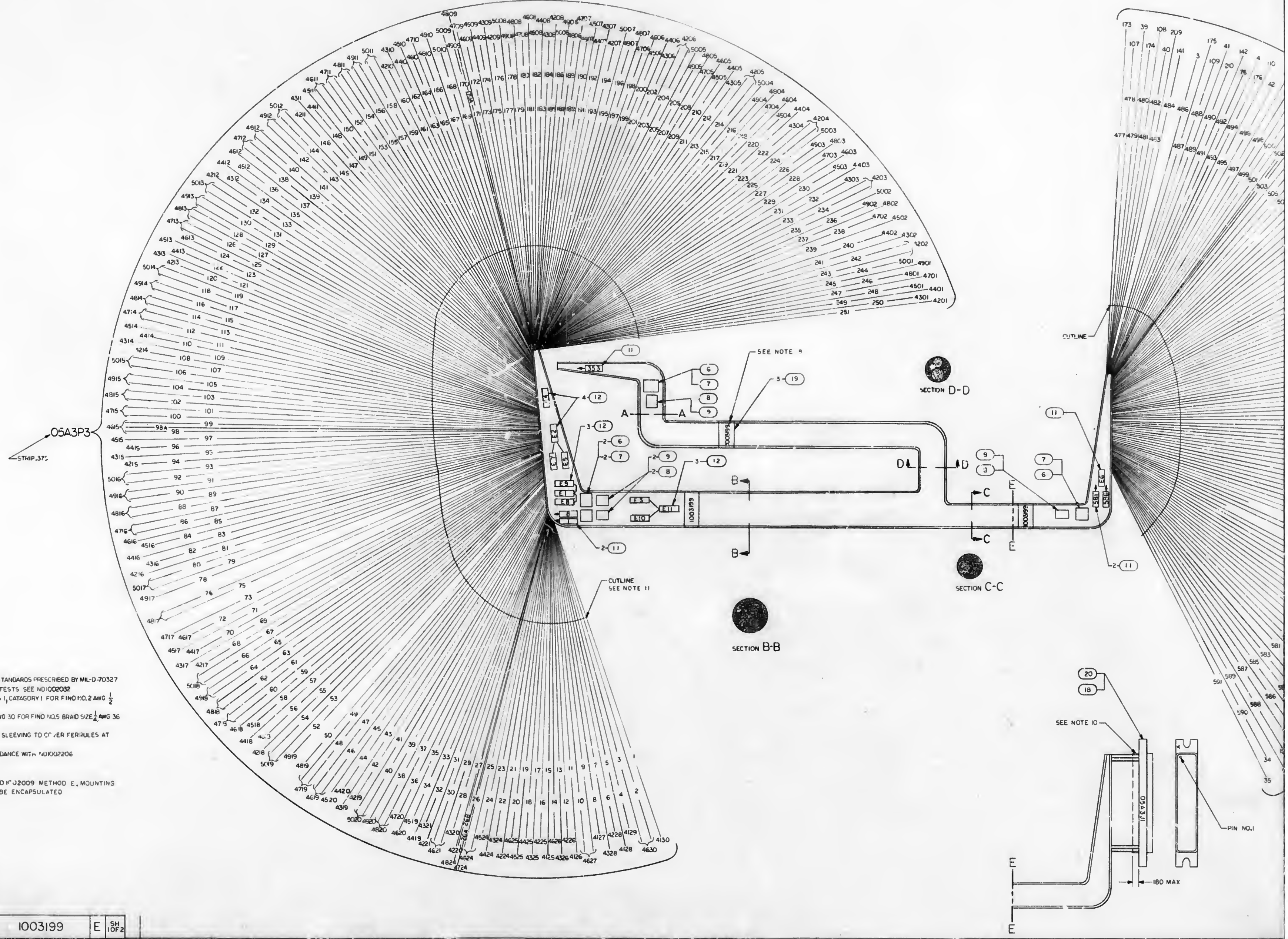
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS "B"
PSA
G & N HARNESS TRAY

CODE IDENT NO. —— SIZE J NASA DRAWING NO. 1003198

SCALE 1/1 WT SHEET 1 OF 1



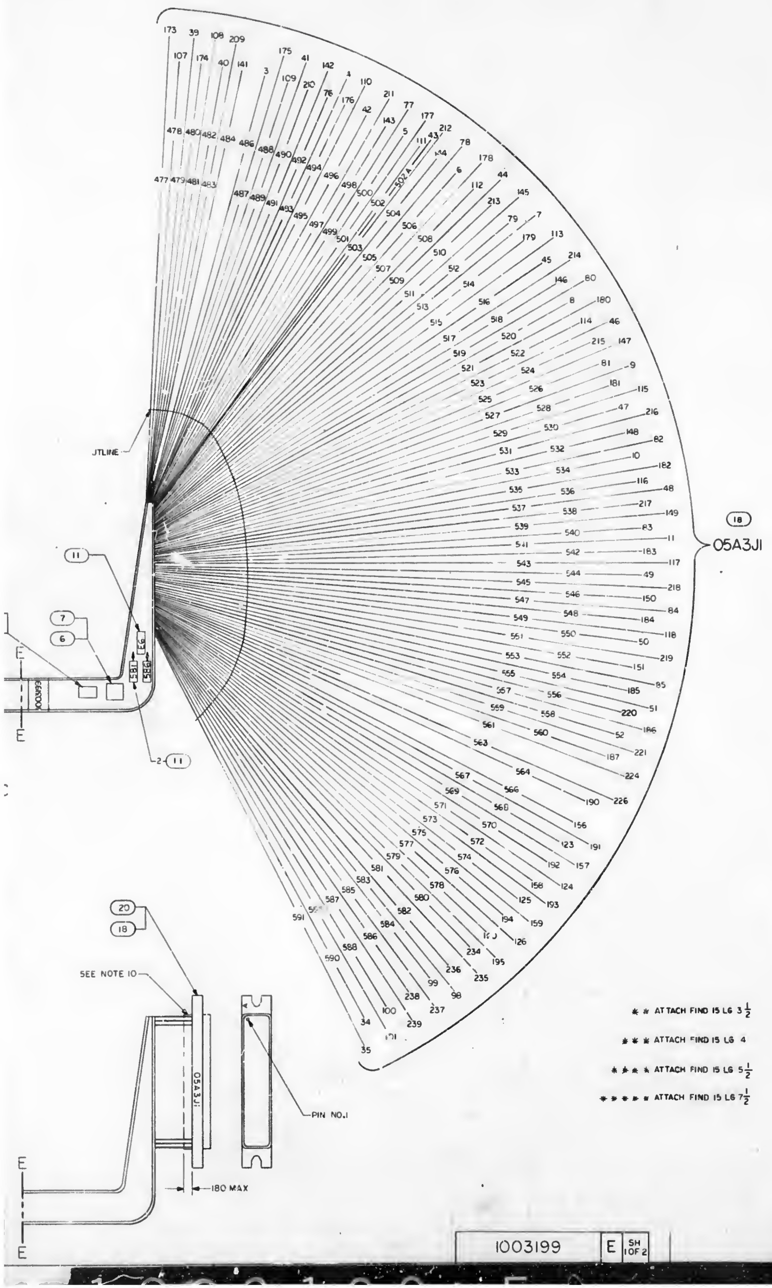
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FOR SYMBOLS FABRICATION AND REQUIRED TESTS SEE ND1002032
3. MIL-I-631 TYPE F FORM U, GRADE A, CLASS 1, CATAGORY I FOR FIND NO. 2 AWG $\frac{1}{2}$ FOR FIND NO. 3 AWG $\frac{3}{8}$
4. QQ-B-575 FOR FIND NO. 4 BRAID SIZE $\frac{3}{8}$, AWG 30 FOR FIND NO. 5 BRAID SIZE $\frac{1}{4}$, AWG 36
5. * DENOTES LENGTH IN FEET
6. FEED WIRES THROUGH BRAID AND SLEEVING; SLEEVING TO COVER FERRULES AT BOTH ENDS OF CABLES
7. INSTALL CRIMP STYLE TERMINALS IN ACCORDANCE WITH ND1002206
8. AR DENOTES AS REQUIRED
9. MARK .08 HIGH BLACK PER ND 1002019
10. ENCAPSULATE INDICATED AREA PER ND1002009 METHOD E. MOUNTING SURFACES OF CONNECTORS MUST NOT BE ENCAPSULATED
11. FINAL CUT & DRESS LEADS AT ASSY

1003199 E SH 1 OF 2

1003199 E E1/3

SHEET 1



** ATTACH FIND 15 LG 3 1/2
*** ATTACH FIND 15 LG 4
**** ATTACH FIND 15 LG 5 1/2
***** ATTACH FIND 15 LG 7 1/2

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO	RUN NO.	REMARKS
ATTACH FIND NO.2 LG 25" AND FIND NO.4 LG 24 3/4" AND FIND NO. 6 & 7 SEE NOTE 6	153	WHT	26	13	452	TWIST
	E1	RED		14	445	
	155	WHT		13	456	
	E1	RED		14	449	
	157	WHT		13	453	
	E1	RED		14	446	
	159	WHT		13	457	
	E1	RED		14	450	
	138	WHT		13	454	
	E1	RED		14	447	
	140	WHT		13	458	
	E1	RED		14	451	
	142	WHT		13	455	
	E1	RED		14	448	
	145	WHT		13	438	
	E1	RED		14	431	
	125	WHT		13	442	
	E1	RED		14	435	
	127	WHT		13	439	
	E8	RED		14	432	
	129	WHT		13	443	
	E8	RED		14	436	
	131	WHT		13	440	
	E8	RED		14	433	
	113	WHT		13	444	
	E8	RED		14	437	
	115	WHT		13	441	
	E8	RED		14	434	
	117	WHT		13	424	
	E8	RED		14	417	
	119	WHT		13	428	
	E8	RED		14	421	
	101	WHT		13	425	
	E8	RED		14	418	
	103	WHT		13	429	
	E8	RED		14	422	
	105	WHT		13	426	
	E9	RED		14	419	
	107	WHT		13	430	
	E9	RED		14	423	
	87	WHT		13	427	
	E9	RED		14	420	
	89	WHT		13	411	
	E9	RED		14	405	
	91	WHT		13	414	
	E9	RED		14	408	
	93	WHT		13	412	
	E9	RED		14	406	
	75	WHT		13	415	
	E9	RED		14	409	
	E1	BLK		15	E8	* *
	E1	BLK		15	E9	
	79	WHT		13	416	TWIST
	E9	RED		14	410	
	59	BLK		15	E9	
		SHLD			471	**
	41	WHT		13	462	
	73			13	461	
	29			13	460	
	25	WHT	26	13	459	
ATTACH FIND NO.3 LG 23 1/4" AND FIND NO.5 LG 24" AND FIND NO. 8 & 9 SEE NOTE 6	9	WHT	26	13	404	
	2	RED		14	403	
	48	WHT		13	399	TWIST
	E2	RED		14	393	
	54	WHT		13	387	
	E2	RED		14	385	
	38	WHT		13	388	
	E2	RED		14	386	
	36	WHT		13	400	
	E2	RED		14	394	
	52	WHT		13	390	
	E2	RED		14	389	
	60	WHT		13	397	
	E2	RED		14	391	
	62	WHT		13	401	
	E2	RED		14	395	
	64	WHT		13	398	
	E2	RED		14	392	
	66	WHT		13	402	TWIST
	E2	RED		14	396	
****	150	BLK		15	E2	
***	46	SHLD	26		383	**
ATTACH FIND NO.3 LG 15 3/8" AND FIND NO.5 LG 16 1/2" AND FIND NO. 8 & 9 SEE NOTE 6	10	WHT	26	13	534	
	3	RED		14	541	
	61	WHT		13	545	TWIST
	E4	RED		14	551	
	63	WHT		13	542	
	E4	RED		14	548	
	65	WHT		13	546	
	E4	RED		14	552	
	67	WHT		13	543	
	E4	RED		14	549	
	49	WHT		13	547	
	E4	RED		14	553	
	53	WHT		13	556	
	E4	RED		14	559	
	37	WHT		13	554	
	E4	RED		14	557	
	50	WHT		13	544	
	E4	RED		14	550	
	39	WHT		13	555	TWIST
	E4	RED		14	558	
****	151	BLK		15	E4	
***	47	SHLD	26		560	****
	152	WHT	26	13	490	TWIST
	E3	RED		14	497	
	154	WHT		13	487	
	E3	RED		14	494	
	156	WHT		13	491	
	E3	RED		14	498	
	158	WHT		13	488	
	E3	RED		14	495	
	139	WHT		13	492	
	E3	RED		14	499	
	141	WHT		13	489	
	E3	RED		14	496	
	143	WHT		13	493	TWIST
	E3	RED	26	14	500	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
ATTACH FIND NO.2 LG 17 1/2" AND FIND NO.4 LG 17 1/4" AND FIND NO. 6 & 7 SEE NOTE 6	144	WHT	26	13	503	TWIST
	E3	RED		14	510	
	126	WHT		13	501	
	E3	RED		14	507	
	128	WHT		13	504	
	E10	RED		14	511	
	130	WHT		13	502	
	E10	RED		14	508	
	132	WHT		13	505	
	E10	RED		14	512	
	112	WHT		13	502 A	
	E10	RED		14	509	
	114	WHT		13	506	
	E10	RED		14	513	
	116	WHT		13	517	
	E10	RED		14	524	
	118	WHT		13	514	
	E10	RED		14	521	
	100	WHT		13	518	
	E10	RED		14	525	
	102	WHT		13	515	
	E10	RED		14	522	
	104	WHT		13	519	
	E11	RED		14	526	
	106	WHT		13	516	
	E11	RED		14	523	
	86	WHT		13	520	
	E11	RED		14	527	
	88	WHT		13	531	
	E11	RED		14	538	
	90	WHT		13	528	
	E11	RED		14	535	
	92	WHT		13	532	
	E11	RED		14	539	
	76	WHT		13	529	
	E11	RED		14	536	
	78	WHT		13	533	
	E11	RED		14	540	
	80	WHT		13	530	TWIST
	E11	RED		14	537	
* *	35	BLK		15	E11	
	40	WHT		13	486	
	30	WHT		13	484	
	26	WHT		13	483	
		SHLD	26		478	* * * * *
	E3	BLK	26	15	E11	* *
	E10	BLK	26	15	E11	
	8	RED	26	16	582	
	11	WHT			581	
* *	15	SHLD			580	* * *
	1	RED		16	587	
	4	WHT			586	
* *	5	SHLD	26		585	* * *
	99	WHT	26	13	E6	
	E6				575	
	E6				569	
	E6				578	
	E6				572	
	E6	WHT	26	13	566	
	170A	WHT	26	13	357A	TWIST
	E5	RED	26	14	356A	
	190	WHT	26	13	380	TWIST
	E5	RED		14	379	
	180	WHT		13	382	
	E5	RED		14	381	
	179	WHT		13	372	
	E5	RED		14	371	
	178	WHT		13	374	
	E5	RED		14	373	
	177	WHT		13	376	
	E5	RED		14	375	
	171	WHT		13	362	
	E5	RED		14	361	
	170	WHT		13	378	
	E5	RED		14	377	
	109	WHT		13	368	
	E7	RED		14	367	
	165	WHT		13	366	
	E7	RED		14	365	
	166	WHT		13	364	
	E7	RED		14	363	
	167	WHT		13	360	
	E7	RED		14	359	
	168	WHT		13	358	
	E7	RED		14	357	
	181	WHT		13	356	
	E7	RED		14	355	
	164	WHT		13	370	TWIST
	E7	RED		14	369	
	E5	BLK	26	15	E2	* *
	E7	BLK	26	15	E2	
	44	WHT	26	13	335	TWIST
	45	RED		14	334	
	31	WHT		13	348	
	32	RED		14	347	
	33	WHT		13	350	
	34	RED		14	349	
	27	WHT		13	346	
	28	RED		14	345A	
	133	WHT		13	352	
	134	RED		14	351	
	135	WHT		13	345	
	136	RED		14	344	
	120	WHT		13	343	
	121	RED		14	342	
	122	WHT		13	331	
	123	RED		14	330	
	108	WHT		13	319	
	109	RED		14	318	
	110	WHT		13	337	
	111	RED		14	336	
	94	WHT		13	339	
	95	RED		14	338	
	96	WHT		13	333	
	97	RED		14	332	
	81	WHT		13	341	
	82	RED		14	340	
	83	WHT		13	321	
	84	RED		14	320	
	68	WHT		13	323	TWIST
	69	RED	26	14	322	

ASSEMBLY INFORMATION C

FROM		DESCRIPTION		
REMARKS	RUN NO.	COLOR	AWG	FIND NO
	70	WHT	26	13
	71	RED		14
	55	WHT		13
	56	RED		14
	57	WHT		13
	58	RED		14
	42	WHT		13
	43	RED	26	14
	26A	WHT	26	13
	26B	RED	26	14
	250	WHT	26	13
	251			
	244			
	245			
	248			
	249			
	247			
	246			
	233			
	242			
	223			
	213			
	203			
	172			
	98	WHT		13
	98A	BLK		15
	229	WHT		13
	222			
	212			
	202			
	219			
	209	WHT		13
	199	RED		14
	189	WHT		13
	197	RED		14
	196	WHT		13
	195	RED		14
	198	WHT		13
	188	RED		14
	187	WHT		13
	186	RED		14
	192	WHT		13
	191	RED		14
	240	WHT		13
	239	RED		14
	231	WHT		13
	230	RED		14
	221	WHT		13
	220	RED		14
	211	WHT		13
	210	RED		14
	201	WHT		13
	200	RED		14
	194	WHT		13
	193	RED		14
	185	WHT		13
	184	RED		14
	176	WHT		13
	175	RED		14
	160	WHT		13
	161	RED		14
	146	WHT		13
	147	RED		14
	183	WHT		13
	182	RED		14
	174	WHT		13
	173	RED		14
	162	WHT		13
	163	RED		14
	148	WHT		13
	149	RED		14
	238	WHT		13
	237	RED		14
	236	WHT		13
	235	RED		14
	228	WHT		13
	227	RED		14
	226	WHT		13
	225	RED		14
	218	WHT		13
	217	RED		14
	216	WHT		13
	215	RED		14
	208	WHT		13
	207	RED		14
	206	WHT		13
	205	RED		14
	85	WHT		13
	72	RED		14
	234	WHT		13
	243			
	224			
	214			
	204	WHT		13
	21	WHT		13
	22	RED		14
	23	WHT		13
	24	RED		14
	16	WHT		13
	17	RED		14
	18	WHT		13
	19	RED		14
	12	WHT		13
	13	RED		14
	20	WHT		13
	14	RED		14
	137	WHT		13
	124	RED		14
	6	WHT		13
	7	RED		14
	241	WHT		13
	232	RED	26	14

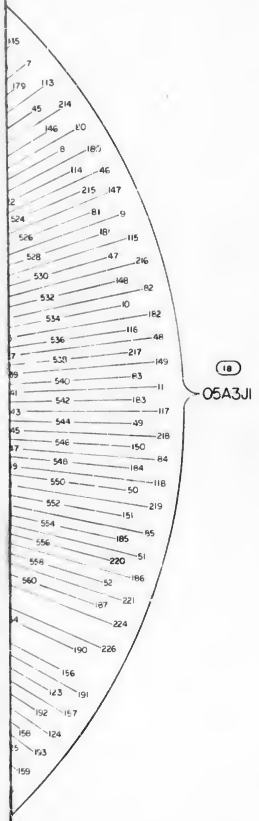
1003197
NEXT ASSY
APPLICATION

1003199 E SH 1 OF 2

SHEET 1

E 1003199

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06330	[illegible]	[illegible]
B	REVISED PER TDRR 06733	[illegible]	[illegible]
C	REVISED PER TDRR 07796 DRW D.P. CHK R.E.E.	4/27/64	
D	REVISED PER TDRR 10128 DRW D.P. CHK R.M.E.	4 JUN 64	
E	REVISED PER TDRR 13109 DR CHK	10/2/64	



ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO	RUN NO.	REMARKS
ATTACH FIND NO.2 LG 25" AND FIND NO.4 LG 24 3/4" AND FIND NO. 6 & 7 SEE NOTE 6	153	WHT	26	13	452	TWIST
	E1	RED		14	445	
	155	WHT		13	456	
	E1	RED		14	449	
	157	WHT		13	453	
	E1	RED		14	446	
	159	WHT		13	457	
	E1	RED		14	450	
	138	WHT		13	454	
	E1	RED		14	447	
	140	WHT		13	458	
	E1	RED		14	451	
	142	WHT		13	455	
	E1	RED		14	448	
	145	WHT		13	438	
	E1	RED		14	431	
	125	WHT		13	442	
	E1	RED		14	435	
	127	WHT		13	439	
	E8	RED		14	432	
	129	WHT		13	443	
	E8	RED		14	436	
	131	WHT		13	440	
	E8	RED		14	433	
	113	WHT		13	444	
	E8	RED		14	437	
	115	WHT		13	441	
	E8	RED		14	434	
	117	WHT		13	424	
	E8	RED		14	417	
	119	WHT		13	428	
	E8	RED		14	421	
	101	WHT		13	425	
	E8	RED		14	418	
	103	WHT		13	429	
	E8	RED		14	422	
	105	WHT		13	426	
	E9	RED		14	419	
	107	WHT		13	430	
	E9	RED		14	423	
	87	WHT		13	427	
	E9	RED		14	420	
	89	WHT		13	411	
	E9	RED		14	405	
	91	WHT		13	414	
	E9	RED		14	408	
	93	WHT		13	412	
	E9	RED		14	406	
	75	WHT		13	415	
	E9	RED		14	409	
	E1	BLK		15	E8	* *
	E1	BLK		15	E9	
	79	WHT		13	416	TWIST
	E9	RED		14	410	
	59	BLK		15	E9	
		SHLD			471	* *
	41	WHT		13	462	
	73			13	461	
	29			13	460	
	25	WHT	26	13	459	
ATTACH FIND NO.3 LG 23 1/4" AND FIND NO.5 LG 24" AND FIND NO. 8 & 9 SEE NOTE 6	9	WHT	26	13	404	
	2	RED		14	403	
	48	WHT		13	399	TWIST
	E2	RED		14	393	
	54	WHT		13	387	
	E2	RED		14	385	
	38	WHT		13	388	
	E2	RED		14	386	
	36	WHT		13	400	
	E2	RED		14	394	
	52	WHT		13	390	
	E2	RED		14	389	
	60	WHT		13	397	
	E2	RED		14	391	
	62	WHT		13	401	
	E2	RED		14	395	
	64	WHT		13	398	
	E2	RED		14	392	
	66	WHT		13	402	TWIST
	E2	RED		14	396	
* * * *	150	BLK		15	E2	
* * *	46	SHLD	26		383	* *
ATTACH FIND NO.3 LG 15 3/8" AND FIND NO.5 L6 16 1/2" AND FIND NO. 8 & 9 SEE NOT_ 6	10	WHT	26	13	534	
	3	RED		14	541	
	61	WHT		13	545	TWIST
	E4	RED		14	551	
	63	WHT		13	542	
	E4	RED		14	548	
	65	WHT		13	546	
	E4	RED		14	552	
	67	WHT		13	543	
	E4	RED		14	549	
	49	WHT		13	547	
	E4	RED		14	553	
	53	WHT		13	556	
	E4	RED		14	559	
	37	WHT		13	554	
	E4	RED		14	557	
	50	WHT		13	544	
	E4	RED		14	550	
	39	WHT		13	555	TWIST
	E4	RED		14	558	
* * * *	151	BLK		15	E4	
* * *	47	SHLD	26		560	* * * *
	152	WHT	26	13	490	TWIST
	E3	RED		14	497	
	154	WHT		13	487	
	E3	RED		14	494	
	156	WHT		13	491	
	E3	RED		14	498	
	158	WHT		13	488	
	E3	RED		14	495	
	139	WHT		13	492	
	E3	RED		14	499	
	141	WHT		13	489	
	E3	RED		14	496	
	143	WHT		13	493	TWIST
	E3	RED	26	14	500	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
ATTACH FIND NO.2 LG 17 1/2" AND FIND NO.4 LG 17 1/4" AND FIND NO. 6 & 7 SEE NOTE 6	144	WHT	26	13	503	TWIST
	E3	RED		14	510	
	126	WHT		13	501	
	E3	RED		14	507	
	128	WHT		13	504	
	E10	RED		14	511	
	130	WHT		13	502	
	E10	RED		14	508	
	132	WHT		13	505	
	E10	RED		14	512	
	112	WHT		13	502 A	
	E10	RED		14	509	
	114	WHT		13	506	
	E10	RED		14	513	
	116	WHT		13	517	
	E10	RED		14	524	
	118	WHT		13	514	
	E10	RED		14	521	
	100	WHT		13	518	
	E10	RED		14	525	
	102	WHT		13	515	
	E10	RED		14	522	
	104	WHT		13	519	
	E11	RED		14	526	
	106	WHT		13	516	
	E11	RED		14	523	
	86	WHT		13	520	
	E11	RED		14	527	
	88	WHT		13	531	
	E 1	RED		14	538	
	90	WHT		13	528	
	E11	RED		14	535	
	92	WHT		13	532	
	E11	RED		14	539	
	76	WHT		13	529	
	E11	RED		14	536	
	78	WHT		13	533	
	E11	RED		14	540	
	80	WHT		13	530	TWIST
	E11	RED		14	537	
* *	35	BLK		15	E11	
	40	WHT		13	486	
	30	WHT		13	484	
	26	WHT		13	483	
		SHLD	26		478	* * * * *
	E3	BLK	26	15	E11	* *
	E10	BLK	26	15	E11	
	8	RED	26	16	582	
	11	WHT			581	
* *	15	SHLD			580	* * *
	1	RED		16	587	
	4	WHT			586	
* *	5	SHLD	26		585	* * *
	99	WHT	26	13	E6	
	E6				575	
	E6				569	
	E6				578	
	E6				572	
	E6	WHT	26	13	566	
	170A	WHT	26	13	357A	TWIST
	E5	RED	26	14	356A	
	190	WHT	26	13	380	TWIST
	E5	RED		14	379	
	180	WHT		13	382	
	E5	RED		14	331	
	179	WHT		13	372	
	E5	RED		14	371	
	178	WHT		13	374	
	E5	RED		14	373	
	177	WHT		13	376	
	E5	RED		14	375	
	171	WHT		13	362	
	E5	RED		14	361	
	170	WHT		13	378	
	E5	RED		14	377	
	169	WHT		13	368	
	E7	RED		14	367	
	165	WHT		13	366	
	E7	RED		14	365	
	166	WHT		13	364	
	E7	RED		14	363	
	167	WHT		13	360	
	E7	RED		14	359	
	168	WHT		13	358	
	E7	RED		14	357	
	181	WHT		13	356	
	E7	RED		14	355	
	164	WHT		13	370	TWIST
	E7	RED		14	369	
	E5	BLK	26	15	E2	* *
	E7	BLK	26	15	E2	
	44	WHT	26	13	335	TWIST
	45	RED		14	334	
	31	WHT		13	348	
	32	RED		14	347	
	33	WHT		13	350	
	34	RED		14	349	
	27	WHT		13	346	
	28	RED		14	345A	
	133	WHT		13	352	
	134	RED		14	351	
	135	WHT		13	345	
	136	RED		14	344	
	120	WHT		13	343	
	121	RED		14	342	
	122	WHT		13	331	
	123	RED		14	330	
	108	WHT		13	319	
	109	RED		14	318	
	110	WHT		13	337	
	111	RED		14	336	
	94	WHT		13	339	
	95	RED		14	338	
	96	WHT		13	333	
	97	RED		14	332	
	81	WHT		13	341	
	82	RED		14	340	
	83	WHT		13	321	
	84	RED		14	320	
	68	WHT		13	323	TWIST
	69	RED	26	14	322	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	70	WHT	26	13	325	TWIST
	71	RED		14	324	
	55	WHT		13	327	
	56	RED		14	326	
	57	WHT		13	329	
	58	RED		14	328	
	42	WHT		13	317	TWIST
	43	RED	26	14	316	
	25A	WHT	26	13	252A	TWIST
	268	RED	26	14	252	
	250	WHT	26	13	476	
	251				475	
	244				474	
	245				473	
	248				469	
	249				468	
	247				466	
	246				467	
	233				470	
	242				472	
	223				463	
	213				464	
	203				465	
	172				384	
	98	WHT		13	353	
	98A	BLK		15	354	* *
	229	WHT		13	310	
	222				311	
	212				312	
	202				309	
	219				313	
	209	WHT		13	315	
	199	RED		14	314	
	189	WHT		13	305	TWIST
	197	RED		14	298	
	196	WHT		13	308	
	195	RED		14	302	
	198	WHT		13	306	
	188	RED		14	299	
	187	WHT		13	303	
	186	RED		14	296	
	192	WHT		13	307	
	191	RED		14	300	
	240	WHT		13	304	
	239	RED		14	297	
	231	WHT		13	301	
	230	RED		14	294	
	221	WHT		13	291	
	220	RED		14	284	
	211	WHT		13	295	
	210	RED		14	288	
	201	WHT		13	292	
	200	RED		14	285	
	194	WHT		13	289	
	193	RED		14	282	
	185	WHT		13	293	
	184	RED		14	286	
	176	WHT		13	290	
	175	RED		14	283	
	160	WHT		13	287	
	161	RED		14	280	
	146	WHT		13	277	
	147	RED		14	270	
	183	WHT		13	281	
	182	RED		14	274	
	174	WHT		13	278	
	173	RED		14	271	
	162	WHT		13	275	
	163	RED		14	268	
	148	WHT		13	279	
	149	RED		14	272	
	238	WHT		13	276	
	237	RED		14	269	
	236	WHT		13	273	
	235	RED		14	266	
	228	WHT		13	263	
	227	RED		14	256	
	226	WHT		13	267	
	225	RED		14	260	
	218	WHT		13	264	
	217	RED		14	257	
	216	WHT		13	261	
	215	RED		14	254	
	208	WHT		13	265	
	207	RED		14	258	
	206	WHT		13	262	
	205	RED		14	255	
	85	WHT		13	259	TWIST
	72	RED		14	253	
	234	WHT		13	477	
	243				479	
	224				480	
	214				481	
	204	WHT		13	482	
	21	WHT		13	564	TWIST
	22	RED		14	567	
	23	WHT		13	570	
	24	RED		14	573	
	16	WHT		13	576	
	17	RED		14	579	
	18	WHT		13	568	
	19	RED		14	571	
	12	WHT		13	574	
	13	RED		14	577	
	20	WHT		13	583	
	14	RED		14	584	
	137	WHT		13	588	
	124	RED		14	589	
	6	WHT		13	590	
	7	RED		14	591	
	241	WHT		13	561	TWIST
	232	RED	26	14	563	

* * ATTACH FIND 15 LG 3 1/2

* * * ATTACH FIND 15 L6 4

* * * * ATTACH FIND 15 LG 5 1/2

* * * * * ATTACH FIND 15 LG 7 1/2

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	☒	1006181	WIRING DIAGRAM	☒
	244	1010736-1	CONTACT, ELEC, PIN	21
	1	1010642-144	CONNECTOR, RECEPTACLE	20
	3	MS18035-1	BAND MARKER, CABLE	19
	244	1010738-2	CONTACT, ELEC, SOCKET	18
	AR	MIL-T-713 TYPE P CL II	LACING, WAXED	17
*	5.5	1010685-8	WIRE, ELEC, AWG 26, 2 COND SHIELDED	16
*	5.5	1010685-13	WIRE, ELEC, AWG 26 BLK	15
*	194	1010585-10	WIRE, ELEC, AWG 26 RED	14
*	244	1010685-11	WIRE, ELEC, AWG 26 WHT	13
	10	1010402-2	SLEEVE, SOLDER, ELEC	12
	6	1010402-1	SLEEVE, SOLDER, ELEC	11
	~~2~~	~~1010402-3~~	~~SLEEVE, SOLDER ELEC~~	~~10~~
	4	1000242-20	FERRULE, ELEC	9
		1000243-35	FERRULE, ELEC	8
	4	1000242-30	FERRULE, ELEC	7
	4	1000243-34	FERRULE, ELEC	6
*	2.6	SEE NOTE 4	WIRE, BRAID	5
*	2.7	SEE NOTE 4	WIRE, BRAID	4
*	2.5	SEE NOTE 3	SLEEVING	3
*	2.6	SEE NOTE 3	SLEEVING	2
	1	1010641-144	CONNECTOR, PLUG ELEC	1

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

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1003197	

APPLICATION

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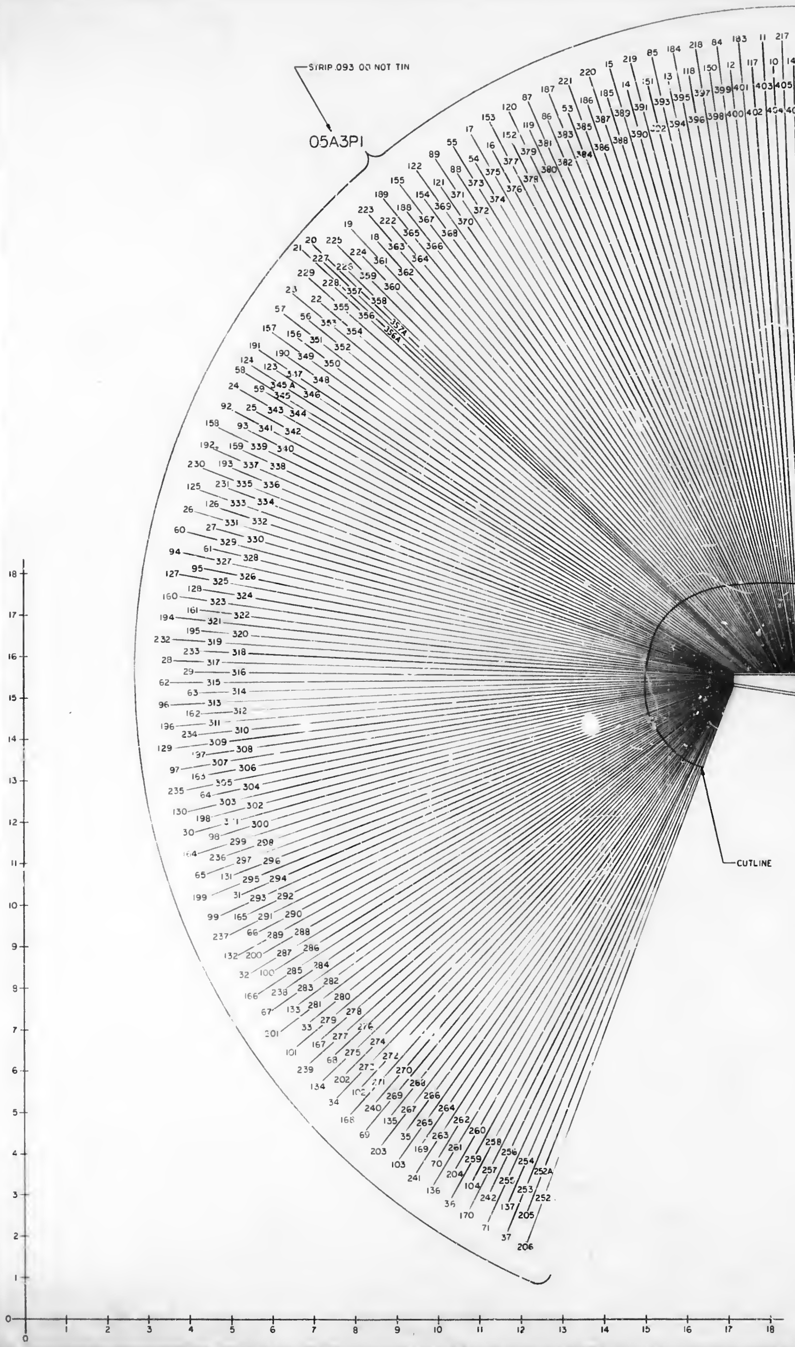
APPROVAL
NASA APPROVAL
ST APPROVAL

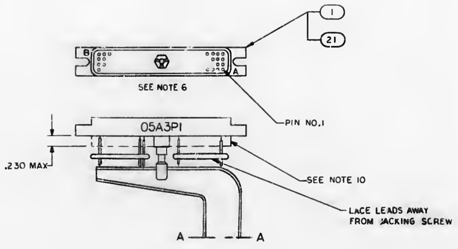
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

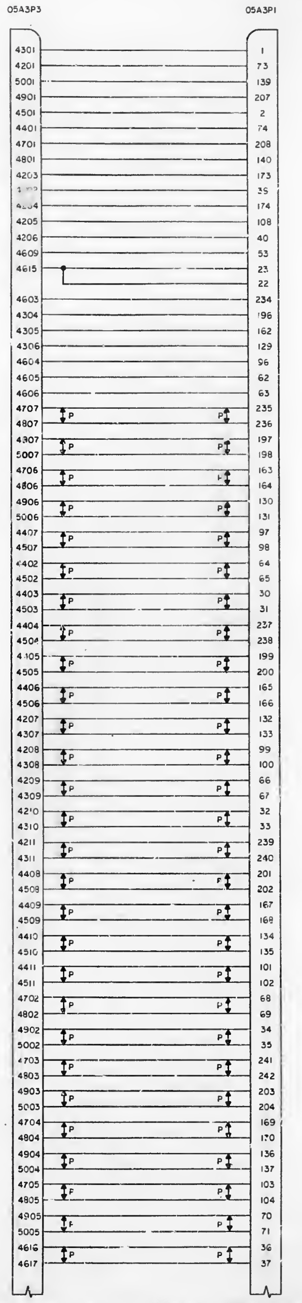
WIRING HARNESS "A" AGC
G&N HARNESS TRAY

CODE IDENT NO. — | SIZE J | NASA DRAWING NO. 1003199
SCALE 1/1 | WT | SHEET 1 OF 2

3199 | E | SH 1 OF 2







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4304	196
4305	162
4306	129
4604	96
4605	62
4606	63
4707	235
4807	236
4307	197
5007	198
4706	163
4806	164
4906	130
5006	131
4407	97
4507	98
4402	64
4502	65
4403	30
4503	31
4404	237
4504	238
4405	199
4505	200
4406	165
4506	166
4207	132
4307	133
4208	99
4308	100
4209	66
4309	67
4210	32
4310	33
4211	239
4311	240
4408	201
4508	202
4409	167
4509	168
4410	134
4510	135
4411	101
4511	102
4702	68
4802	69
4902	34
5002	35
4703	241
4803	242
4903	203
5003	204
4704	169
4804	170
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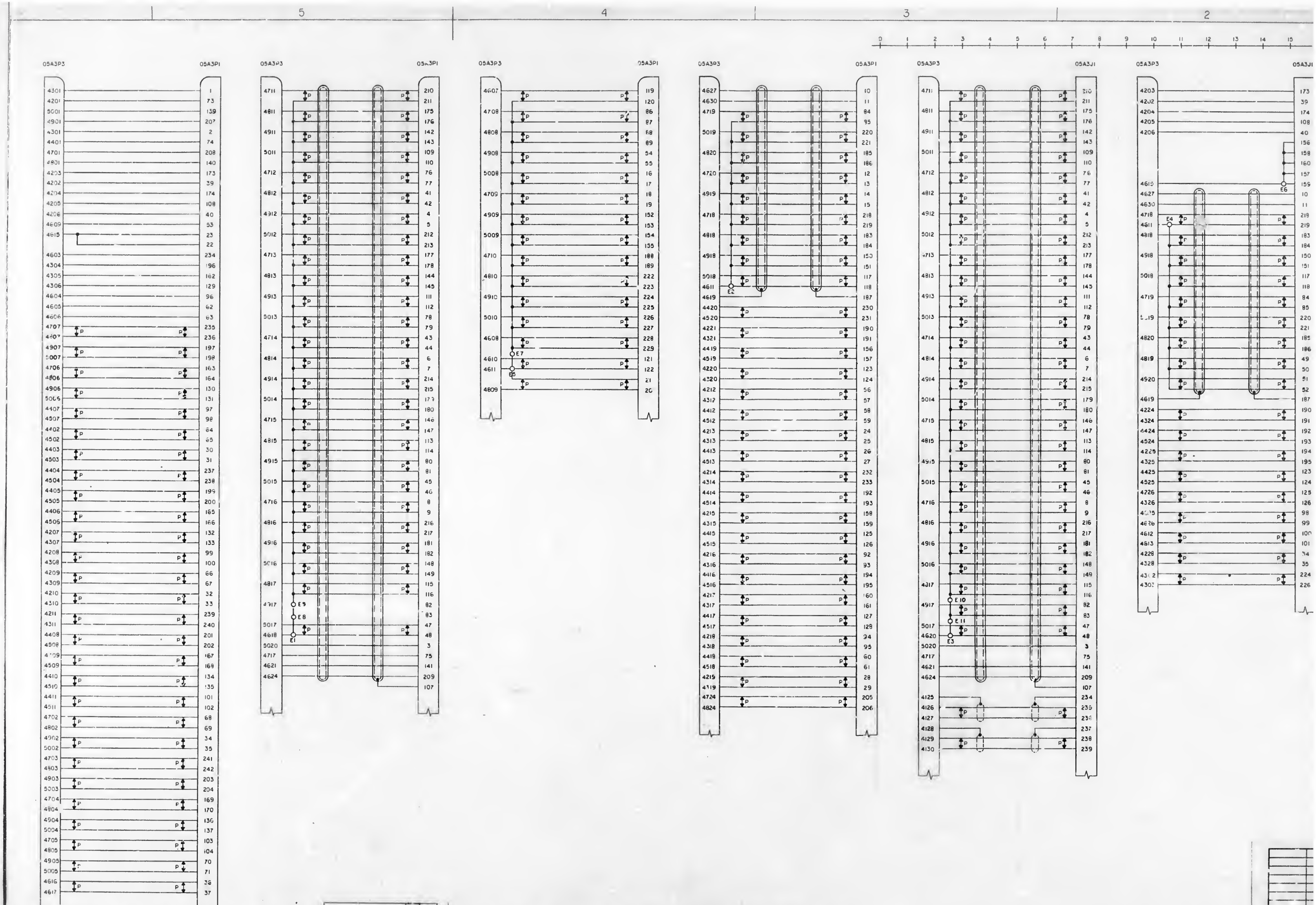
4617	37

SHEET 2

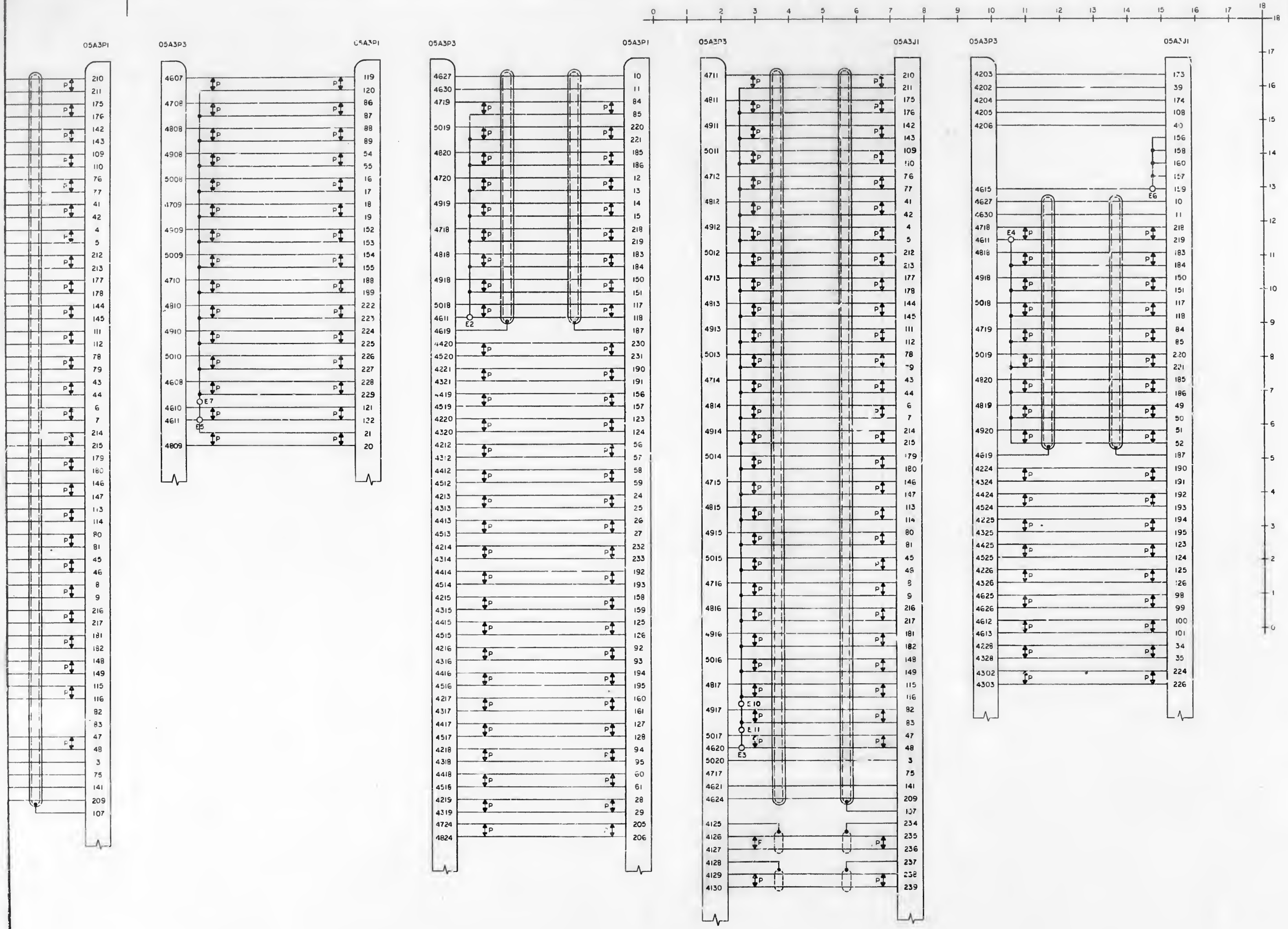


1003199 E SH 2 OF 2

SHEET 2

E 1003199

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR [illegible]	[illegible]	[illegible]
B	REVISED PER TDRR [illegible]	[illegible]	[illegible]
C	REVISED PER TDRR 09496 DR R.W. D[illegible] CHK R.E.E.	[illegible]	[illegible]
D	REVISED PER TDRR 10128 DR R.W. D[illegible] CHK R.E.E.	4 Jun 64	[illegible]
E	REVISED PER TDRR 13109 DR P. [illegible] CHK [illegible]	10/7/64	[illegible]



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

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APPLICATION

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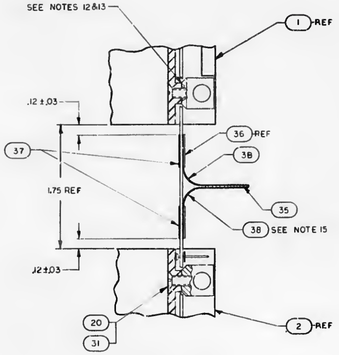
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

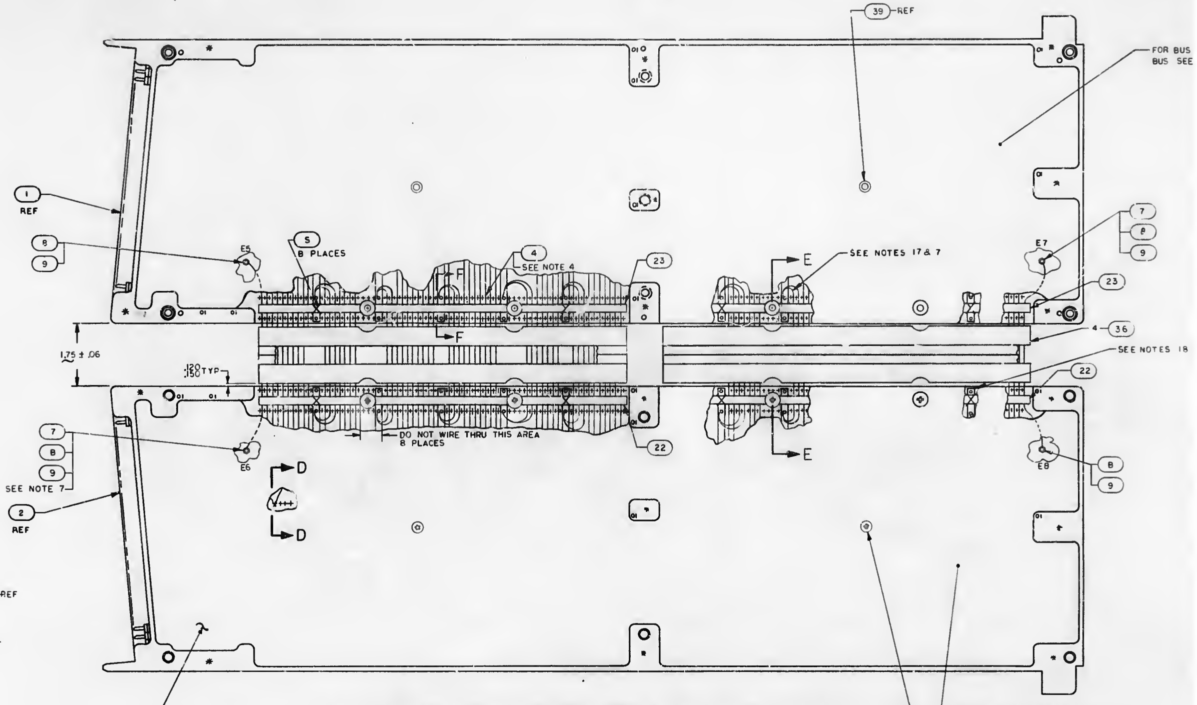
WIRING HARNESS "A" AGC
G&N HARNESS TRAY

CODE IDENT NO. — SIZE J NASA DRAWING NO. 1003199
SCALE 1/1 WT SHEET 2 OF 2

03199 E SH 2 OF 2



SECTION E-E
SCALE 2/1

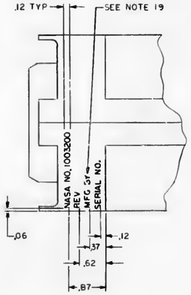


VIEW OF FIND NO.1 AND FIND NO.2 SHOWN IN OPEN POSITION
FOR INTERTRAY WIRING

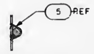
SEE NOTE 3

FOR BUS STRIPS AND POWER SUPPLY BUS SEE DETAIL B ON SHEET 3

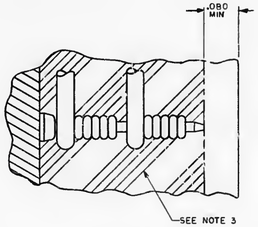
40 REF



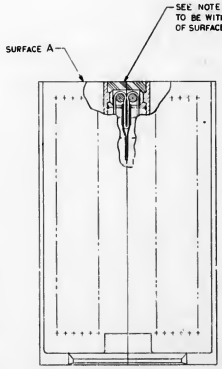
VIEW A-A

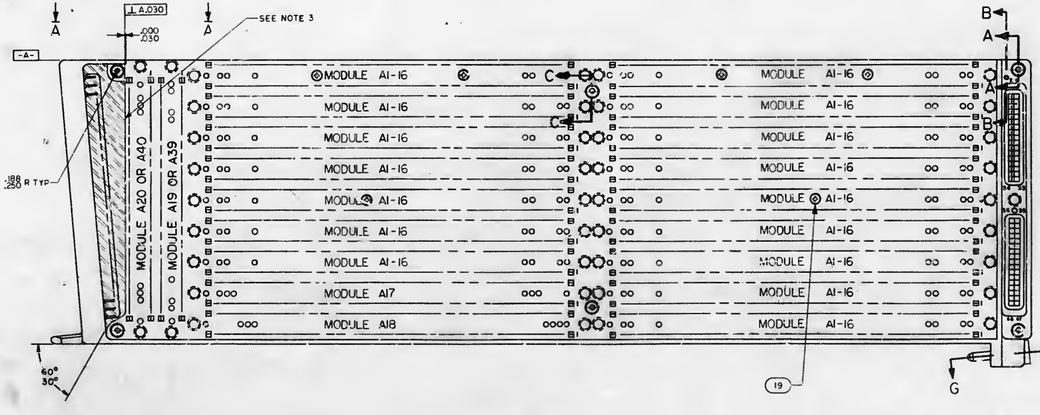


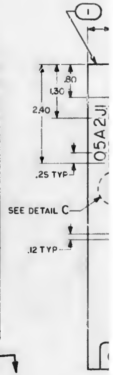
SECTION F-F



SECTION D-D
SCALE 10/1



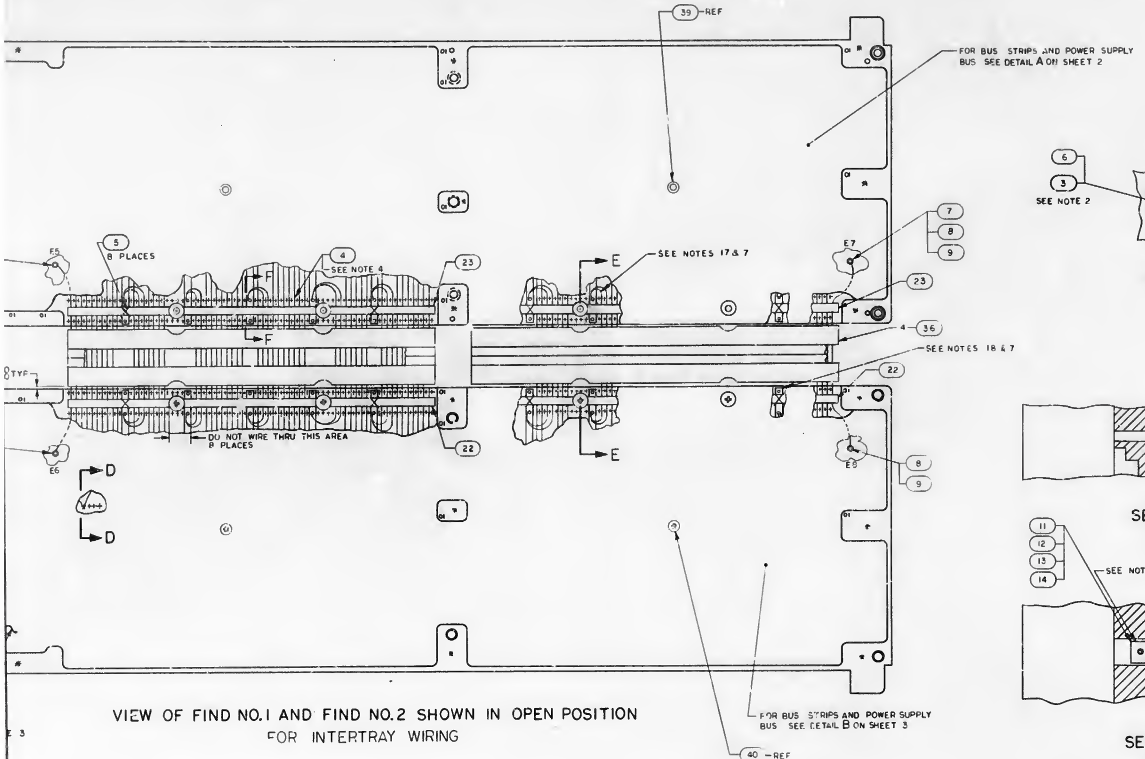




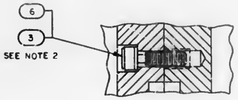
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. TORQUE ALL SCREWS 15 TO 19 INCH POUNDS
3. ENCAPSULATE PER ND 1002217, ALL WIRING MUST BE RETAINED WITHIN ENCAPSULANT
4. WIRE PER ND 1002031 AND ND 1006155
5. COAT ALL MATING SURFACES INICATED THUS ✱ WITH FIND NO. 34
6. AR DENOTES AS REQUIRED
7. SOLDER PER ND 1002071
8. WIREWRAP PER 1006151 & ND 1002031 USING FIND NO. 7
9. WIREWRAP PER 1006156 & ND 1002031 USING FIND NO. 30
10. WIREWRAP PER 1006152 & ND 1002031 USING FIND NO. 7
11. WIREWRAP PER 1006157 & ND 1002031 USING FIND NO. 30
12. DETERMINE ACTUAL DIMENSION BETWEEN MOUNTING SURFACES FOR FIND NO. 39 & 40 AND FIND NO. 22 & 23. THIS DETERMINES THE NECESSARY THICKNESS OF FIND NO. 31
13. BOND FIND NO. 21 TO FIND NO. 1 & 2, FIND NO. 39 TO FIND NO. 1, FIND NO. 31 TO FIND NO. 40 & 2; FIND NO. 23 TO FIND NO. 1 PER ND 1002004
14. MARKING AND LETTERING BLACK PER ND 1002019 AND ND 1002122, TYPE II, CLASS I
15. BOND FIND NO. 36 TO FIND NO. 38 AT POSITION INDICATED BY REMOVING .300 WIDE BACKING STRIP OF FIND NO. 38 AT THAT POINT ONLY. REMOVE ALL BACKING ON OPPOSITE SIDE
16. WIRE WRAP PER 1006155 & ND 1002031 USING FIND NO. 4
17. JUMPER + 3 VOLTS BUS STRIPS FROM TRAY A LEFT TO TRAY A RIGHT WITH 2 LENGTHS OF FIND NO. 4 4 PLACES
18. JUMPER GROUND BUS STRIPS FROM TRAY A LEFT TO TRAY A RIGHT WITH 2 LENGTHS OF FIND NO. 4 6 PLACES
19. MARK AND SERIALIZE .12 HIGH WHITE PER ND 1002023

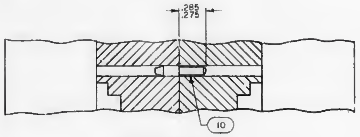
SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 61502 DR CHK APP	1/4/64	HWC
B	REVISED PER TDRR 07650 DR CHK	6/4/64	HWC
C	REVISED PER TDRR 10734 DR CHK		
D	REVISED PER TDRR 11412 DR CHK RTM	9/13/64	


39 -REF
FOR BUS STRIPS AND POWER SUPPLY BUS SEE DETAIL A ON SHEET 2
5 8 PLACES
4 SEE NOTE 4
23
SEE NOTES 17 & 7
E5
E7
7
8
9
F
E
4 - 36
SEE NOTES 18 & 7
8 TYP
22
DO NOT WIRE THRU THIS AREA 8 PLACES
E6
E8
D
40 -REF
FOR BUS STRIPS AND POWER SUPPLY BUS SEE DETAIL B ON SHEET 3

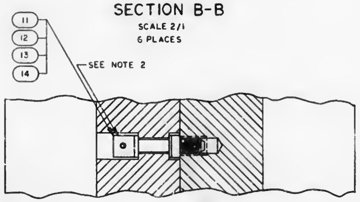
VIEW OF FIND NO.1 AND FIND NO.2 SHOWN IN OPEN POSITION
FOR INTERTRAY WIRING



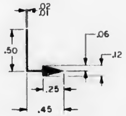
SECTION C-C
SCALE 2/1
2 PLACES



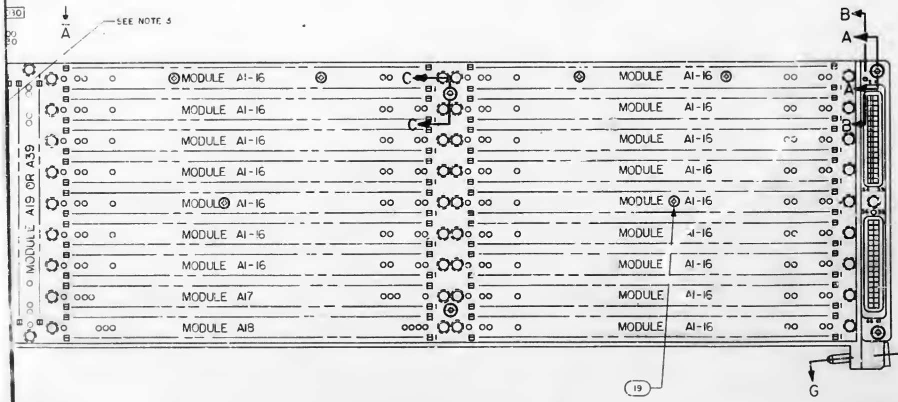
SECTION B-B
SCALE 2/1
6 PLACES

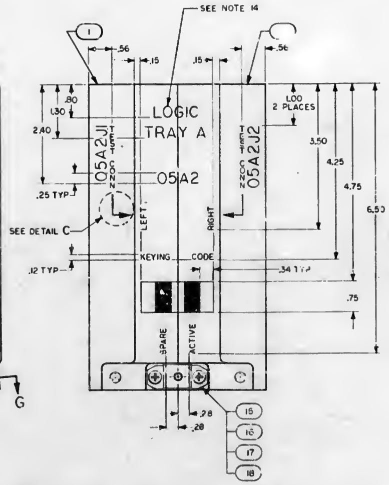


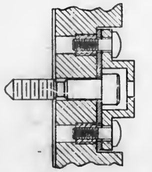
SECTION A-A
SCALE 2/1
4 PLACES



DETAIL C
SCALE 2/1







PARTIAL SECTION G-G
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006155	TRAY A LEFT TO RIGHT WIRING	REF
☒	1006157	HANDWIRING, RH TRAY	REF
☒	1006156	HANDWIRING, LH TRAY	REF
☒	1006152	WIREWRAP CARD RH TRAY	REF
☒	1006151	WIREWRAP CARD LH TRAY	REF
2	1004622-2	SPACER	40
2	1004622-4	SPACER	39
AR	1005806-2	TAPE, INSULATION	38
AR	1006806-7	TAPE, INSULATION	37
4	1004625	INSULATOR	36
2	1004624	STIFFNER	35
AR	1006879	COMPOUND, SILICON	34
AR	1006776-21	INSULATION, SLEEVING	33
AR	QQ-W-343 TYPES	WIRE, COATED, SOFT, 22 GAGE	32
12	1004623	SHIM	31
AR	1006732-2	WIRE, ELECTRICAL	30
16	1003195	BUS, STRIP ASSY	29
2	1003194	BUS, STRIP ASSY	28
2	1003193	BUS, STRIP ASSY	27
2	1003192	BUS, STRIP ASSY	26
2	1003191	BUS, STRIP ASSY	25
4	1003190	BUS, STRIP ASSY	24
2	1004621	WIRE HOLD DOWN, LH	23
2	1004620	WIRE HOLD DOWN, RH	22
2	1004616	COMB, WIRE	21
6	MS24693-PC3	SCREW, FLAT	20
6	MS24693-PC8	SCREW, FLAT	19
1	1004261	SCREW, JACK	18
1	1004254	RETAINER, JACK SCREW	17
1	1004262	PLATE, BACKING	16
2	NAS1402-2	SCREW, PAN HD	15
4	1008145	SPRING, PIN	14
8	1004546-1	WASHER, FLAT	13
4	1004257	SCREW, EJECTION	12
4	1004256	DRIVE CYLINDER, EJECTION SCREW	11
6	1004249	PIN, STEP	10
4	MS35333-69	WASHER, LOCK, FLAT	9
4	1004615-2	TERMINAL, THREADED	8
AR	1006732-1	WIRE, ELECTRICAL, INS	7
2	1004546-3	WASHER, FLAT	6
AR	MIL-Y-713 TYPE P, CL 2	TAPE, LACING AND TYING	5
AR	1006732-3	WIRE, ELECTRICAL INS	4
2	1004250	SCREW	3
1	1003137	TRAY A SUB ASSEMBLY RIGHT HAND	2
1	1003136	TRAY A SUB ASSEMBLY LEFT HAND	1

LIST OF MATERIALS

1003186	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

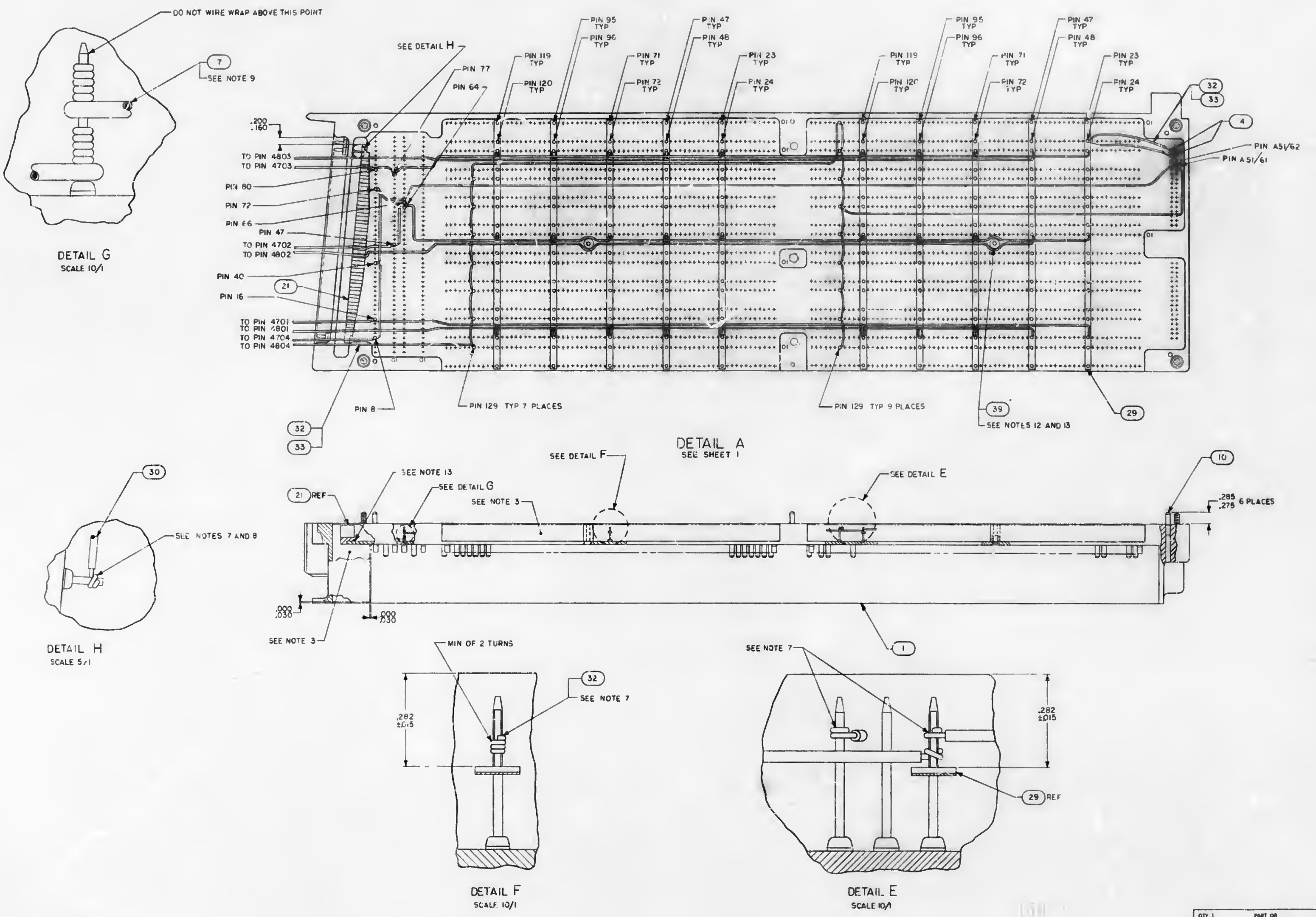
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY A WIRED ASSEMBLY

CODE IDENT NO. —— SIZE J NASA DRAWING NO. 1003200
SCALE 1/1 WT SHEET 1 OF 3

[illegible]

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	THIS SHEET ADDED PER TDRR 07502		
B	REVISED PER TDRR 07[illegible] DR [illegible] CHK [illegible]	[illegible]	
C	REVISED PER TDRR 10734 DR Wheeler CHK [illegible]	7/22/62	
D	REVISED PER TDRR 11912 DR [illegible] CHK CM RTM	9/13/64	



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY	USED ON
1003186	

APPLICATION

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INSTRUMENTATION LAB
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CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
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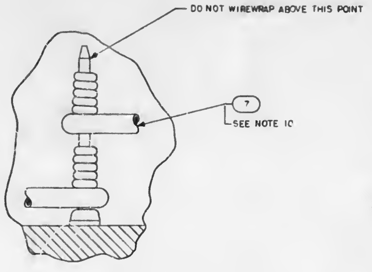
HOUSTON, TEXAS

TRAY A
WIRED ASSEMBLY

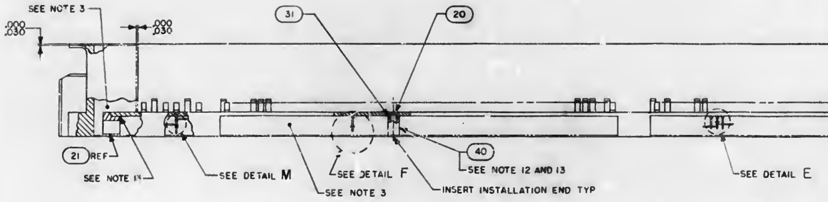
CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003200
SCALE 1/1
WT
SHEET 2 OF 3

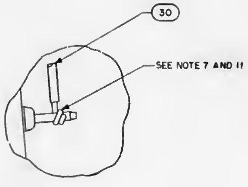
NOTICE — [illegible]

SYM	DESCRIPTION	DATE	APPROVAL
A	THIS SHEET ADDED PER TDRR 07502		
B	REVISED PER TDRR 07650 DR [illegible] CHK [illegible]	1/31/64	[illegible]
C	REVISED PER TDRR 10734 DR [illegible] CHK [illegible]	3/31/64	RFB
D	REVISED PER TDRR 11912 DR [illegible] CHK [illegible]	8/13/64	[illegible]

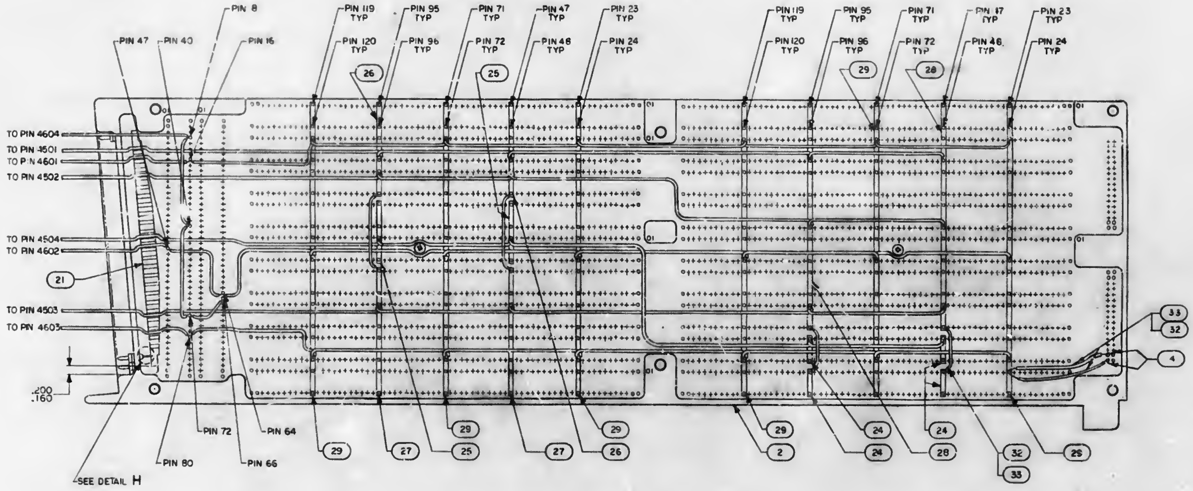


DETAIL M
SCALE 10/1





DETAIL L
SCALE 5/1



DETAIL B
SEE SHEET 1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003186	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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MATERIAL
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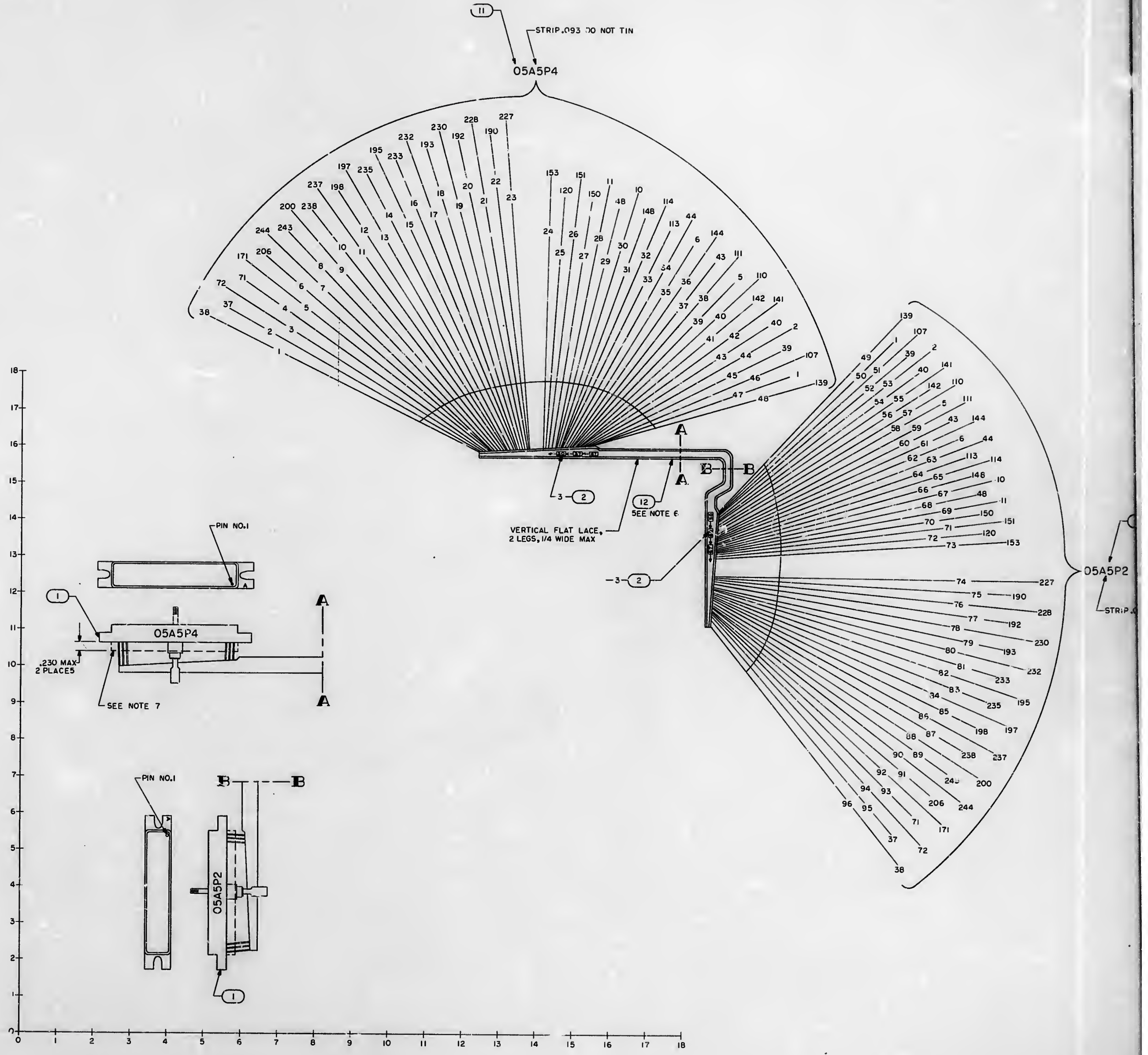
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO. CONTRACT
DRAWN A[illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL
APPROVAL [illegible] 29 Jan 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY A
WIRED ASSEMBLY

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003200
SCALE 1/1
WT
SHEET 3 OF 3

ASSEMBLY INFORMATION CHART						
FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO	REMARKS
	47	WHT	26	3	50	
	45	RED			52	
	43	WHT			54	
ATTACH FIND NO.8 LG 2 3/4	44	SHLD			53	ATTACH FIND NO.8 LG 2 3/4
	35	WHT		3	62	
	37	RED			60	
	34	WHT			63	
ATTACH FIND NO.8 LG 2 3/4	39	SHLD			58	ATTACH FIND NO.8 LG 2 3/4
	29	WHT		4	68	
	30	RED			67	
ATTACH FIND NO.8 LG 2 3/4	28	SHLD			69	ATTACH FIND NO.8 LG 2 3/4
TWIST	24	WHT		5	73	TWIST
	25	RED		6	72	
	23	BLU		7	74	
	21	WHT		5	76	
	22	RED		6	75	
	6	RED		6	91	
	7	WHT		5	90	
	8	BLU		7	89	
	5	BLK		8	92	
	46	RED		6	51	
	48	WHT		5	49	
	42	WHT		5	55	
	41	RED		6	56	
	36	WHT		5	61	
	38	RED		6	59	
	33	WHT		5	64	
	32	RED		6	65	
	40	WHT		5	57	
	31	RED		6	66	
	27	WHT		5	70	
	26	RED		6	71	
	1	WHT		5	96	
	2	RED		6	95	
	3	WHT		5	94	
	4	RED		6	93	
	18	WHT		5	79	
	20	BLU		7	77	
	19	RED		6	78	
	16	WHT		5	81	
	17	BLU		7	80	
	15	RED		6	82	
	12	WHT		5	85	
	13	BLU		7	84	
	14	RED		6	83	
	11	RED		6	86	
	10	BLU		7	87	
TWIST	9	WHT	26	5	88	TWIST



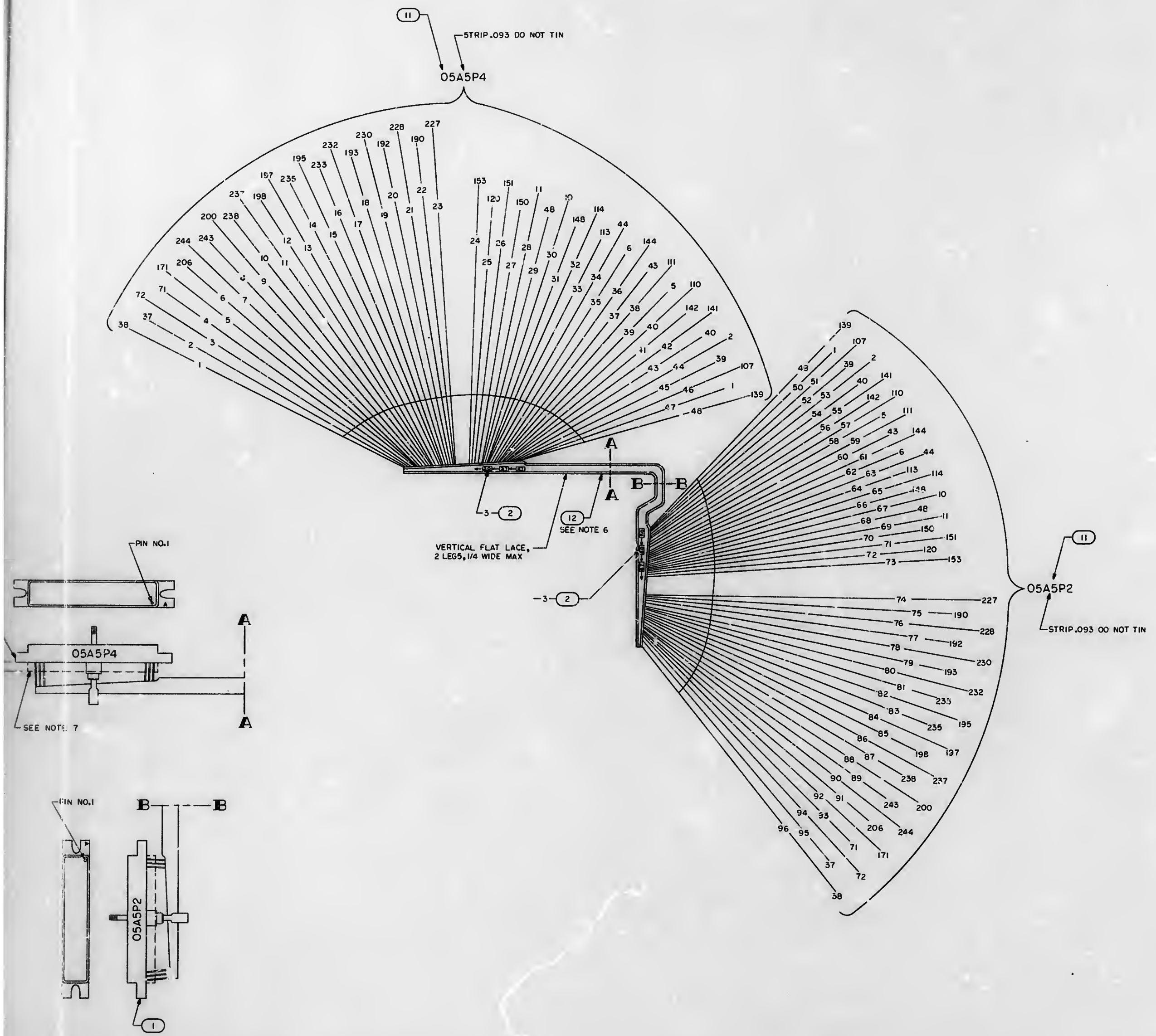
NOTES:

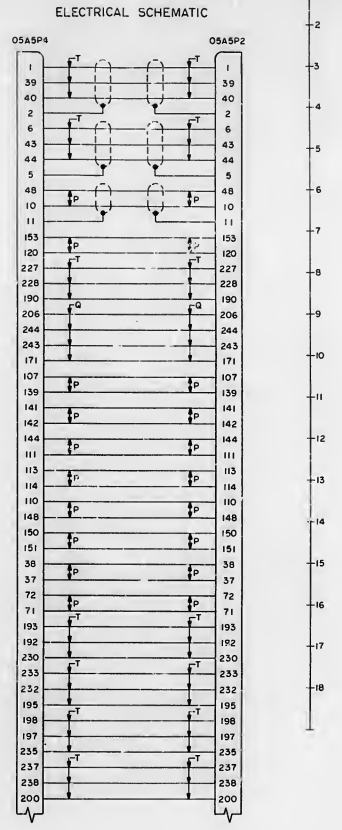
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D 70327
2. FOR SYMBOLS FABRICATION AND REQUIRED TESTS SEE ND 1002032
3. INSTALL CRIMP STYLE TERMINALS IN ACCORDANCE WITH ND 1002206
4. ✱ DENOTES LENGTH IN FEET
5. AR DENOTES AS REQUIRED
6. MARK .08 HIGH BLACK PER ND 1002019
7. ENCAPSULATE INDICATED AREA PER ND 1002009 METHOD E, MOUNTING SURFACES OF CONNECTORS MUST NOT BE ENCAPSULATED

	B	1003201	

REVISIONS 06013

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06236		
B	REVISED PER TDRR 06[illegible]		





QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010674	WIRING DIAGRAM	REF
1	1014472-1	BAND MARKER, CABLE	12
488	1010738-1	CONTACT ELEC, PIN	11
~~244~~	~~1010738-2~~	~~CONTACT ELEC, SOCKET~~	~~10~~
AR	MIL-T-713, TYPE P92	LACING, WAXED	9
* 1.5	1010685-13	WIRE, ELEC, AWG [illegible] BLACK	8
* 7.5	1010685-12	WIRE, ELEC, AWG 26 BLUE	7
* 18	1010685-10	WIRE, ELEC, AWG 26 RED	6
* 18	1010685-11	WIRE, ELEC, AWG 26 WHITE	5
* 3	1010685-8	WIRE, ELEC, AWG 26 2 COND SHLD	4
* 8	1010685-9	WIRE, ELEC, AWG 26 3 COND SHLD	3
6	1010402-1	SLEEVE, SOLDER, ELEC	2
2	1010641-244	CONNECTOR, PLUG	1

LIST OF MATERIALS

1003155	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
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DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL
APPROVAL [illegible] 29 Jan 64
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 29 Jan 64

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WIRING HARNESS "C"
PSA

CODE IDENT NO. — SIZE J NASA DRAWING NO. 1003201
SCALE 1/1 WT SHEET 1 OF 1

1003201 B

ASSEMBLY INFORMATION CHART						
FROM					TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	1	WHT	26	3	109	
	2				111	
	3				114	
	4				117	
	5				118	
	6				121	
	7				124	
	8				125	
	9				128	
	10				131	
	11				132	
	12				135	
	13				138	
	14				139	
	15				142	
	16				145	
	17				146	
	18				149	
	19				153	
	20				152	
	21				156	
	22				160	
	23				159	
	24				163	
	25				167	
	26				166	
	27				170	
	28				174	
	29				173	
	40				192	
	72				172	
	74				169	
	75				168	
	76				165	
	78				162	
	79				161	
	80				158	
	81				157	
	82				155	
	85				154	
	84				151	
	83				150	
	86				148	
	87				147	
	88				144	
	89				143	
	90				141	
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	92				137	
	93				136	
	94				134	
	95				133	
	96				130	
	97				129	
	98				127	
	99				126	
	100				123	
	101				122	
	102				120	
	103				119	
	104				116	
	105				115	
	106				112	
	107				113	
	108				110	
TWIST	30	WHT		3	177	TWIST
	33	RED		4	183	
	31	WHT		3	180	
	34	RED		4	186	
	32	WHT		3	179	
	35	RED		4	185	
	36	WHT		3	188	
	39	RED		4	191	
	37	WHT		3	189	
	38	RED		4	193	
	41	WHT		3	194	
	42	RED		4	195	
	43	RED		4	216	
	44	WHT		3	215	
	45	RED		4	214	
	46	WHT		3	213	
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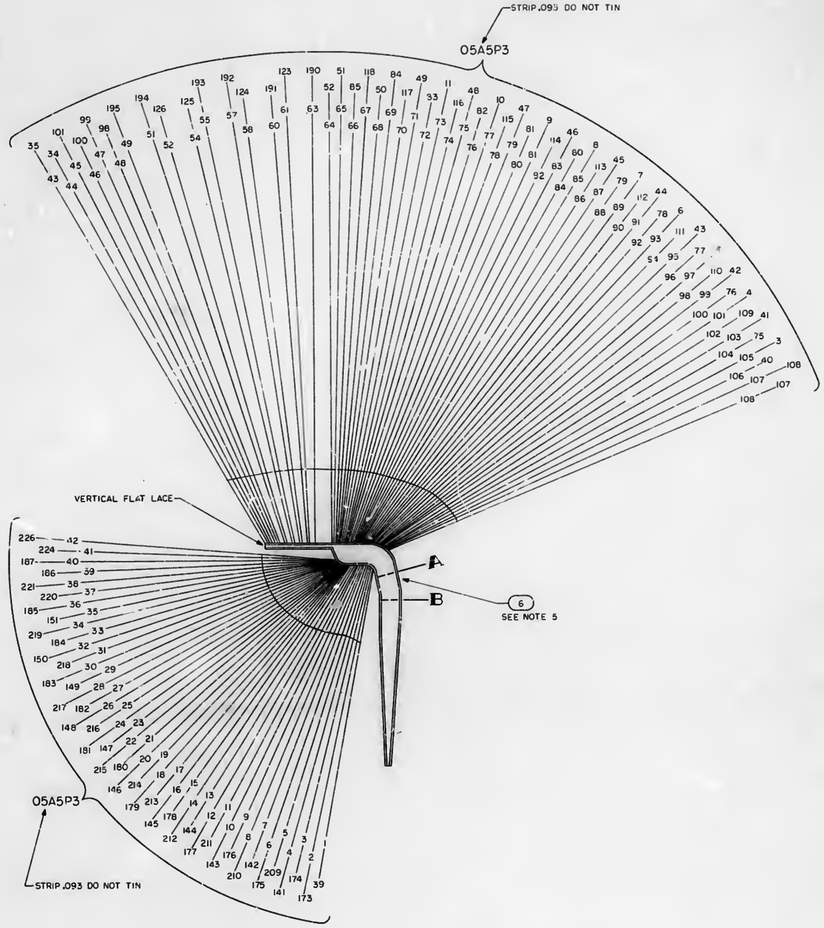
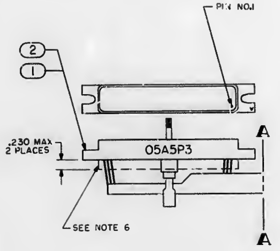
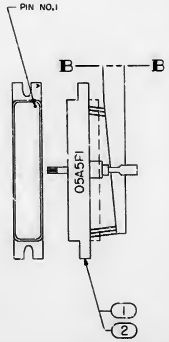
	63	WHT		3	196	
	64	RED		4	190	
	65	WHT		3	187	
	66	RED		4	184	
	69	WHT		3	178	
	67	RED		4	182	
	70	WHT		3	176	
TWIST	68	RED		4	181	TWIST
	71	WHT		3	175	
	73	RED		4	171	
	77	WHT	26	3	164	

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FOR SYMBOLS FABRICATION AND REQUIRED TESTS SEE ND1002032
3. INSTALL CRIMP STYLE TERMINALS IN ACCORDANCE WITH ND1002206
4. ✳DENOTES LENGTH IN FEET
5. MARK .08 HIGH BLACK PER ND1002015
6. ENCAPSULATE INDICATED AREA PER ND1002009 METHOD E, MOUNTING SURFACES OF CONNECTORS MUST NOT BE ENCAPSULATED

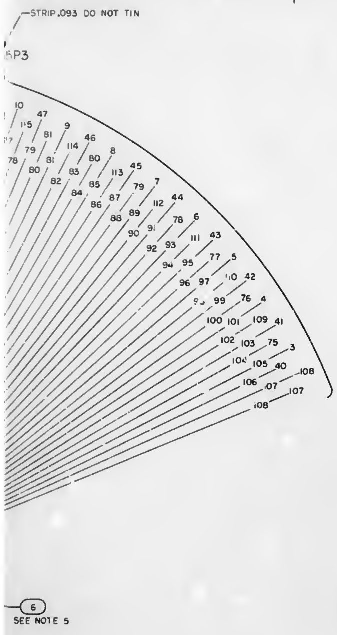


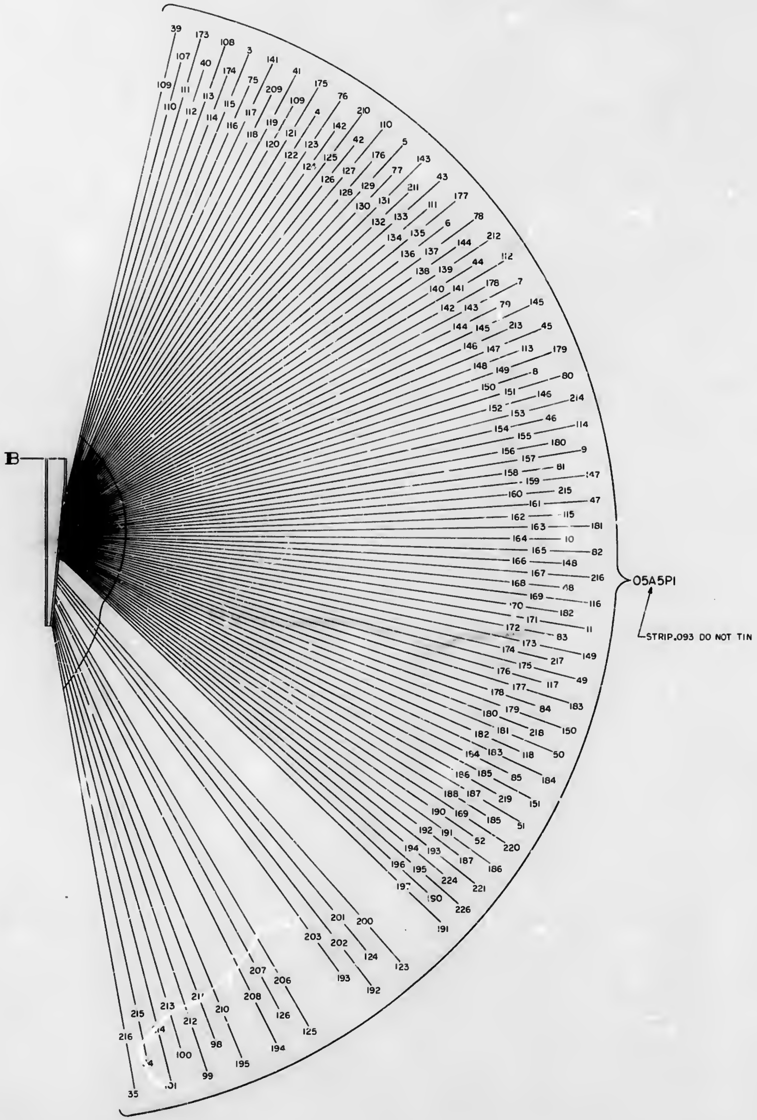


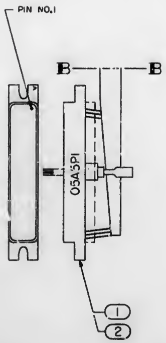


1003202 B

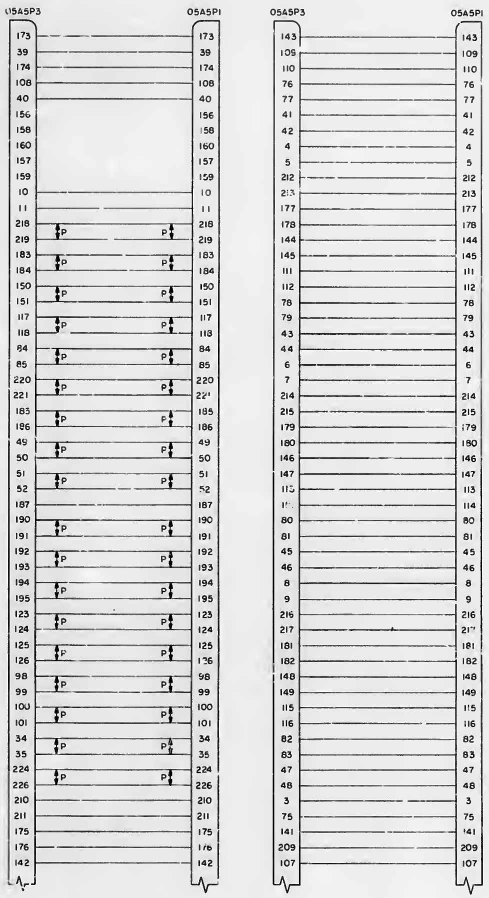
	A	REVISED PER TDR
	B	REVISED PER TD







ELECTRICAL SCHEMATIC



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142	142	107	107

	QTY REQD	PART OR IDENTIFYING NO	
	☒	1006180	WIRING DIAG
	1	1014472-1	BAND MARKE
	~~244~~	~~1010738-2~~	~~CONTACT, ELE~~
*	16	1010685-10	WIRE, ELEC, A
*	64	1010685-11	WIRE, ELEC, A
	488	1010738-1	CONTACT, ELE
	2	1010641-144	CONNECTOR, P

LIST OF MATERIALS

NEXT ASSY	USED ON
1003155	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
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FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
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DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 29 Jan 64

MANNED

WIRING

CODE IDENT NO. J
SCALE 1/1

1003202 B

SYM	DESCRIPTION	DATE	APPROVAL
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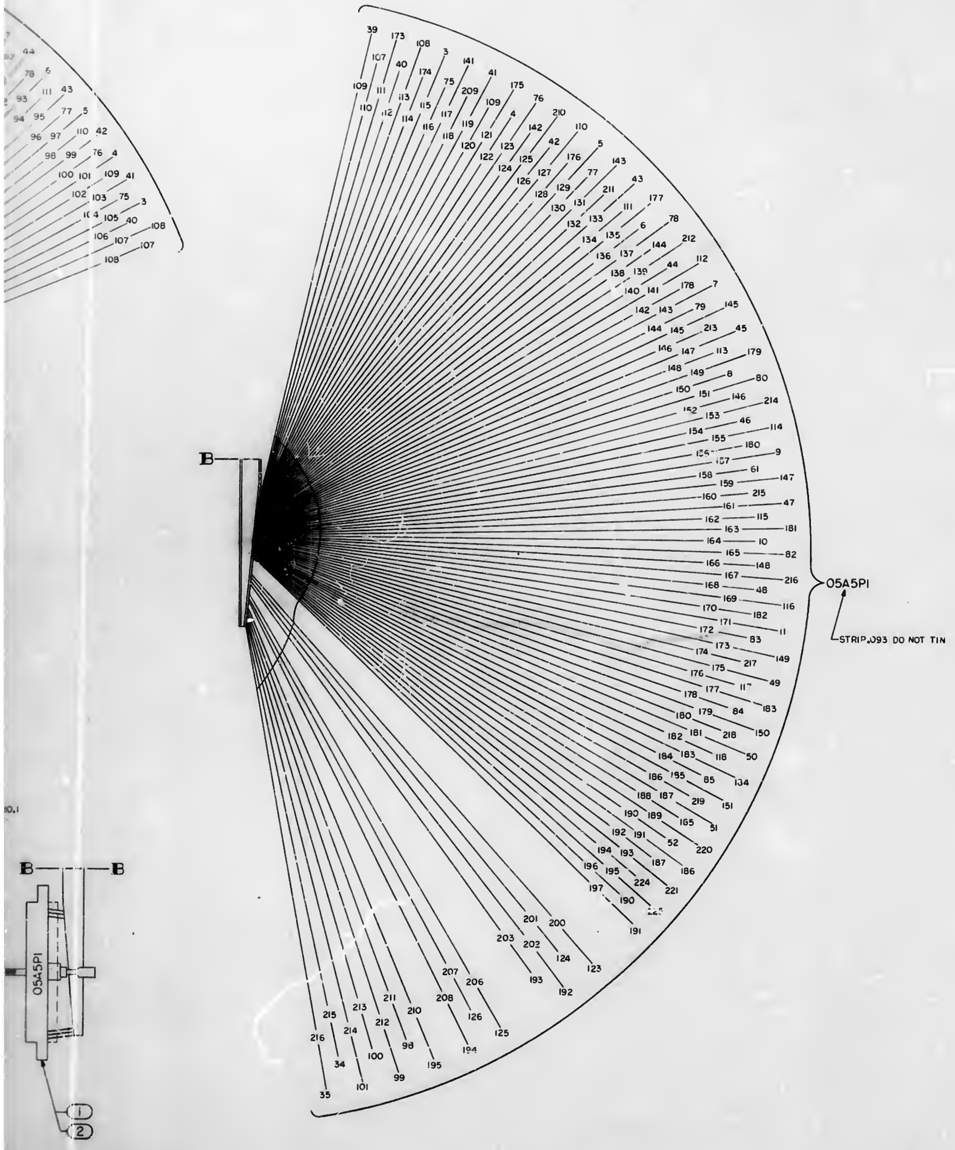
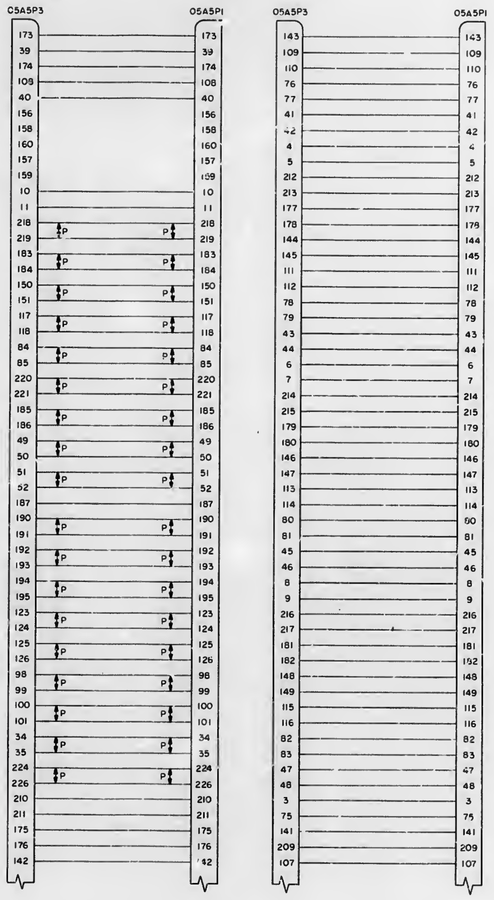
B	REVISED PER TDRR 06633	7/10/64	

REVISIONS 06613



ELECTRICAL SCHEMATIC



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35		35
224	P	224
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211		211
175		175
176		176
142		142

05A5P3	05A5P1
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209	209
107	107

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
	☒	1006180	WIRING DIAGRAM	REF
	1	1014472-1	BAND MARKER, CABLE	6
	~~244~~	~~1010738-2~~	~~CONTACT, ELECTRICAL, SOCKET~~	5
*	16	1010685-10	WIRE, ELEC, AWG 26 RED	4
*	64	1010685-11	WIRE, ELEC, AWG 26 WHITE	3
	488	1010738-1	CONTACT, ELECTRICAL, PIN	2
	2	1010641-144	CONNECTOR, PLUG	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003155	

APPLICATION

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APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 29 Jan 64

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HOUSTON, TEXAS

WIRING HARNESS "D" AGC

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003202
SCALE 1/1
WT
SHEET 1 OF 1

ECLIPSE–PROGRAM ASSEMBLY NO.1003203

MODULE B21 BANKS A-10, 30 B-06, 25					MODULE B22 BANK A-06, 26 B-07, 27					MODULE B23 BANK A-14, 34 B-11, 31					MODULE B24 BANK A-12, 33 B-13, 33					MODULE B28 BANK A-04, 24 B-01, 21					MODULE B29 BANK A-02, 22 B-03, 23					PROGRAM SPECIFICATION		
																															EFFECTIVITY	
DASH NO.	MODULE DECK NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE DECK NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE DECK NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE PROGRAM NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE DECK NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	FUNCTION	AGE	LAUNCH PER
-1		12000	PINBALL	A	-1		14000	DSRUPT CDU DRIVING MISCELLANEOUS	A A A											-1		2000	INTERPRETER EXECUTIVE WAITLIST MISCELLANEOUS	A A A A	-1		4000	INTERPRETER EXECUTIVE WAITLIST MISC	A A A A	SYSTEM TEST TD R-140	4	
																						10000 50000 42000	PINBALL INTERFACE TEST SELFTEST STUFF AND NONSENSE	A A A A			6000	INTERPRETER EXECUTIVE WAITLIST	A A A		4	
-2		12000 20000 60000	PINBALL RIGHT BANK (LIST 2) RIGHT BANK (LIST 2)	A A A	-2		16000 14000	PRELAUNCH DSRUPT CDU DRIVING MISC	A A A A																					SYSTEM TEST TD R-140		
-2		12000 20000 60000	PINBALL RIGHT BANK (LIST 2) RIGHT BANK (LIST 2)	A A A	-2		16000 14000	PRELAUNCH DSRUPT CDU DRIVING MISC	A A A A											-1		2000 10000 50000 42000	INTERPRETER EXECUTIVE WAITLIST MISC PINBALL INTERFACE TEST SELFTEST STUFF AND NONSENSE	A A A A A A A A	-1		4000 3000	INTERPRETER EXECUTIVE WAITLIST MISC INTERPRETER EXECUTIVE WAITLIST	A A A A A A A	SYSTEM TEST TD R-132	4	

SYM	REVISIONS DESCRIPTION	DATE	APPROVAL

ECLIPSE-PROGRAM ASSEMBLY NO.1003203

MODULE B23 BANK A-14, 34 B-11, 31			MODULE B24 BANK A-12, 32 B-13, 33					MODULE B28 BANK A-04, 24 B-01, 21					MODULE B29 BANK A-02, 22 B-03, 23					PROGRAM SPECIFICATION			
INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE PROGRAM NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE DECK NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	DASH NO.	MODULE NO.	INITIAL COMPLETE ADDRESS	SUB PROGRAM	REV	FUNCTION	EFFECTIVITY AGE	EFFECTIVITY LAUNCH PERIOD	REV
								-1		2000	INTERPRETER EXECUTIVE WAITLIST MISCELLANEOUS	A A A A	-1		4000	INTERPRETER EXECUTIVE WAITLIST MISC.	A A A A	SYSTEM TEST TD R-140	4		A
										10000 50000	PINBALL INTERFACE TEST SELFTEST	A A A			6000	INTERPRETER EXECUTIVE WAITLIST	A A A		4		
										42000	STUFF AND NONSENSE	A									
																		SYSTEM TEST TD R-140			B
								-1		2000	INTERPRETER EXECUTIVE WAITLIST MISC	A A A A	-1		4000	INTERPRETER EXECUTIVE WAITLIST MISC	A A A A	SYSTEM TEST TD R-132	4		B
										10000 50000	PINBALL INTERFACE TEST SELFTEST	A A A			6000	INTERPRETER EXECUTIVE WAITLIST	A A A				
										42000	STUFF AND NONSENSE	A									

NOTES:
1. COMPUTER PROGRAM ASSEMBLY NO. AND MODULE DASH NO. WILL BE MARKED ON EACH MODULE.

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

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DRAWN Lomat Bland DATE 5-27-66
CHECKED
APPROVAL Richard H. Battin
APPROVAL Eldon C. Hall 12-Feb 69
NASA APPROVAL W. J. Rhine 2-12-69
MIT APPROVAL 12 Feb 69

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HOUSTON, TEXAS

COMPUTER PROGRAM
ASSEMBLY
(ECLIPSE)

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1003203
SCALE — | WT | SHEET 1 OF 1

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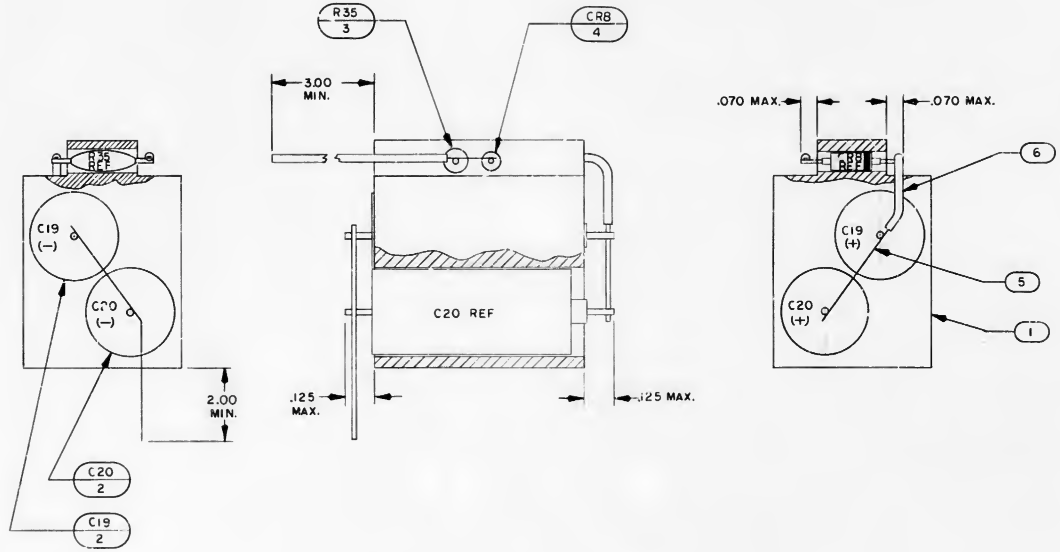
REVISIONS 07/70			
SYM	DESCRIPTION	DATE	APPROVAL



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. AR DENOTES AS REQUIRED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006148	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	6
AR	1006757-1	WIRE ELECTRICAL .010×.020	5
1	1006751	DIODE	4
1	1006750-24	RESISTOR	3
2	1006755-134	CAPACITOR	2
1	1004283	HOLDER COMPONENT	1

LIST OF MATERIALS

1003167	1003184
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
FINAL FINISH

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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN DATE 7/9/64
CHECKED
APPROVAL
APPROVAL Eldon C Hall 28 Apr 64
NASA APPROVAL 7/12/64
MIT APPROVAL 28 Apr 64

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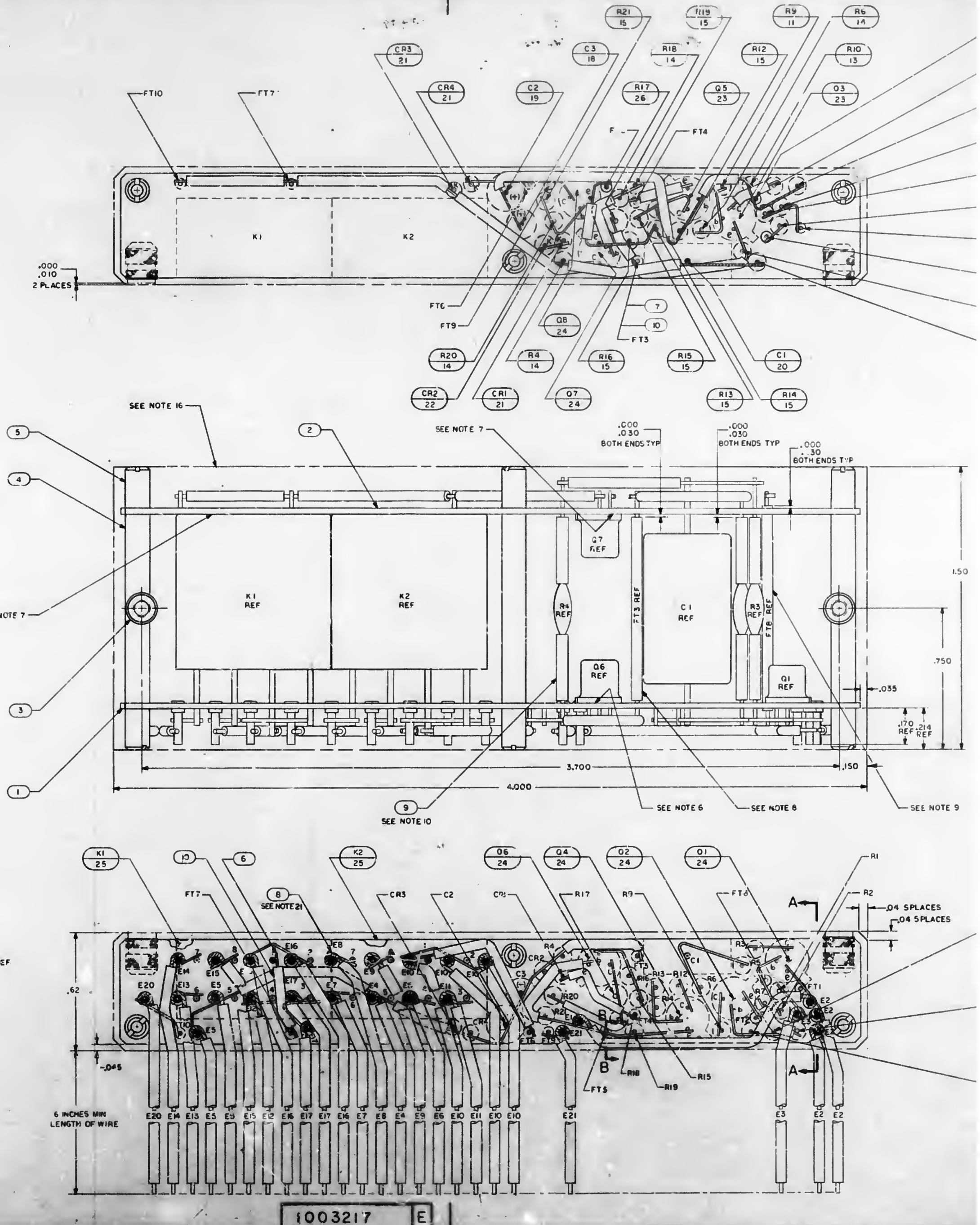
HOUSTON, TEXAS

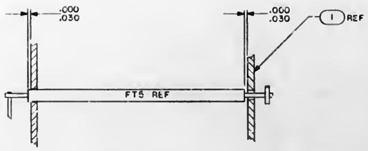
STRAND GATE MODULE
SUBASSEMBLY 6

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003206
SCALE 4/1
WT
SHEET 1 OF 1



NOTES

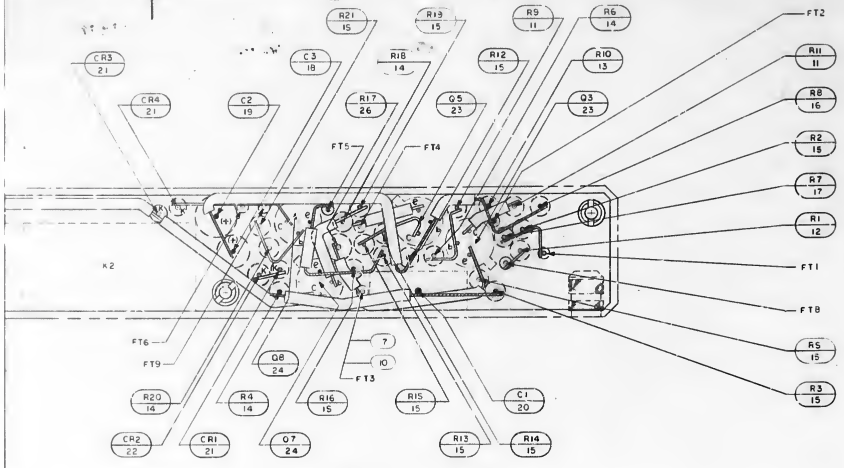
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. A R DENOTES AS REQUIRED
3. F T DENOTES FEED THROUGH
4. + DENOTES POSITIVE SIDE OF CAPACITOR
5. K DENOTES CATHODE SIDE OF DIODE
6. BOND FIND NUMBER 24(Q1,Q2,Q4,Q6)TO FIND NUMBER 1 PER ND 1002004 TYPE I OR TYPE V
7. BOND FIND NUMBER 23(Q3,Q5), FIND NUMBER 24(Q7,Q8) AND FIND NUMBER 25(K1,K2) TO FIND NUMBER 2 PER ND 1002004 TYPE I OR TYPE V
8. TYPICAL SLEEVING FOR FT3,FT4,FT6,FT7,FT9 & FT10
9. TYPICAL SLEEVING FOR FT2 AND FT8
10. TYPICAL SLEEVING FOR FIND NUMBERS 11 THRU 18,21 AND 22
11. WELD PER ND 1002005
12. BLACK DOT AND CROSS HATCHED WIRING INDICATES UPPER LEVEL WIRING
13. WHITE DOT AND CLEAR WIRING INDICATES LOWER LEVEL WIRING
14. UNLESS OTHERWISE SPECIFIED ALL WIRING SHALL BE IN ACCORDANCE WITH ND 1002069
15. ~~DIP COAT PER ND 1002063 PRIOR TO ENCAPSULATION~~
16. ENCAPSULATE PER ND 1002183 TYPE I
17. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019 AND ND1002122, TYPE II, CLASS 2 USING INK 1006271-1. CENTRALIZE AS SHOWN
18. MARK .140/.100 HIGH WHITE CHARACTERS PER ND1002019 AND ND1002122, TYPE II, CLASS 2 AND SERALIZE PER ND1002023 USING INK 1006271-1
19. COMPLETED ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH AND SHALL MEET ALL OF THE REQUIREMENTS OF PS1003217
20. ~~FIND NO. 8 TO BE ETCHED PER ND1002146~~
21. SOLDER FIND NO. 8 TO ALL "E" CONTACTS PER ND1002071, USING SOLDER PER ND1002075
22. DIM. INDICATES LEAD BREAK OUT LOCATION

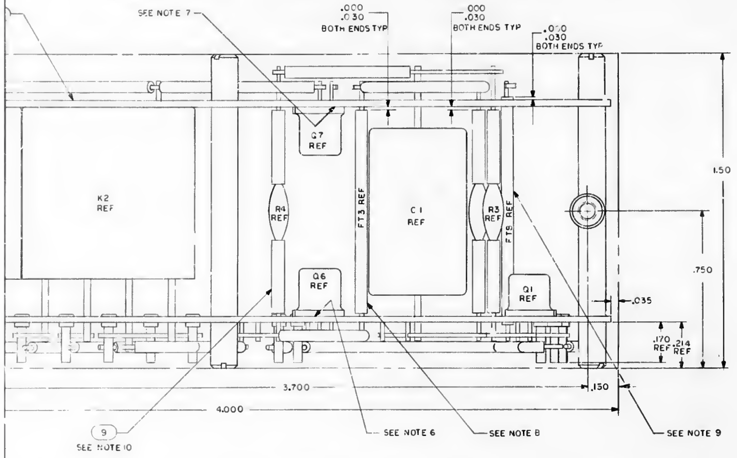


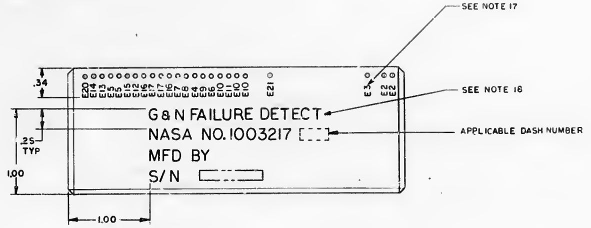
SECTION B-B

1003217 E

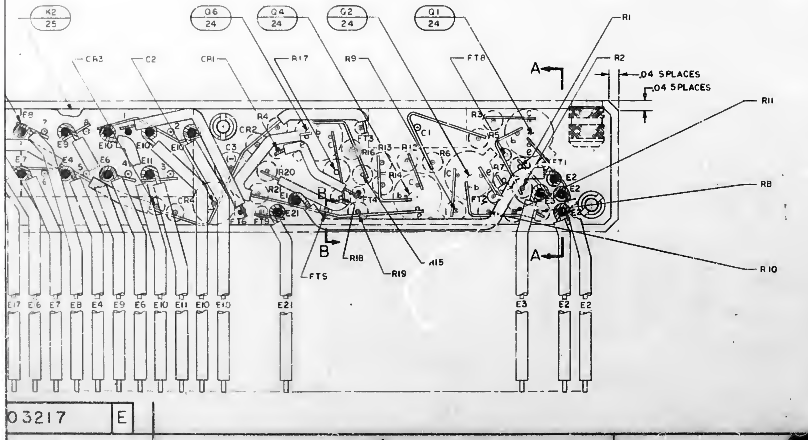
REVISIONS 2040 7						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 21345	RAB			
B		REVISED PER TDRR 21580				
C		REVISED PER TDRR 22168				
D		REVISED PER TDRR 22461				
E		REVISED PER TDRR 23128				

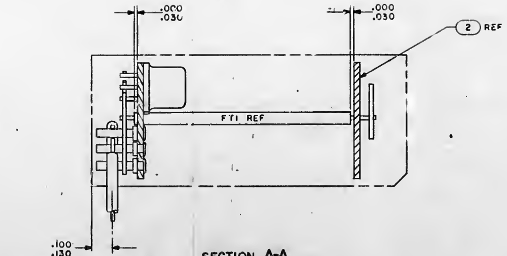






MARKING VIEW
SCALE 2/1





SECTION A-A

⊠	1005730	SCHEMATIC	REF
1	1006760-32	RESISTOR	26
2	1006815 – 2	RELAY	25
6	1006753	TRANSISTOR	24
2	1006752	TRANSISTOR	23
1	1006838	DIODE	22
3	1006751	DIODE	21
1	1006793 – 7	CAPACITOR	20
1	1006755 – 79	CAPACITOR	19
1	1006755 – 69	CAPACITOR	18
1	1006750 – 84	RESISTOR	17
1	1006750 – 80	RESISTOR	16
10	1006750 – 39	RESISTOR	15
4	1006750 – 32	RESISTOR	14
1	1006750 – 25	RESISTOR	13
1	1006750 – 15	RESISTOR	12
2	1006750 – 8	RESISTOR	11
AR	1006776 – 22	INSULATION SLEEVING	10
AR	1006776 – 21	INSULATION SLEEVING	9
AR	1010789-016	WIRE, ELECTRICAL, STRD, AWG 26	8
AR	1006757 – 8	WIRE, ELECTRICAL .020 DIA	7
AR	1006757 – 14	WIRE, ELECTRICAL .010 x .020	6
6	1008161 – 5	SCREW, CAP, SLOTTED HEAD SPECIAL	5
3	1015135 – 017	SPACER	4
2	1006391 – 001	INSERT, SCREW THREAD	3
1	1004320	WIRING BOARD 'B'	2
1	1003218-011	WIRING BOARD ASSEMBLY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
011	LIST OF MATERIALS		

1003731	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± — XXX ±.005 XX ±.02 ± —
DO NOT SCALE THIS DRAWING
MATERIAL
—

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DRAWN 21 Jan 65
CHECKED 6-23-65
APPROVED
APPROVED C.A. Hall
APPROVED MIT M.G. Foley 6-28-65
APPROVED MSC
DATE

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G&N FAILURE DETECT
MODULE ASSEMBLY

CODE IDENT NO.	SIZE	DRAWING NO.
80230	J	1003217

SCALE 2/1 SHEET 1 OF 1

1003217 E

03217 E

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REVISIONS 20407						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
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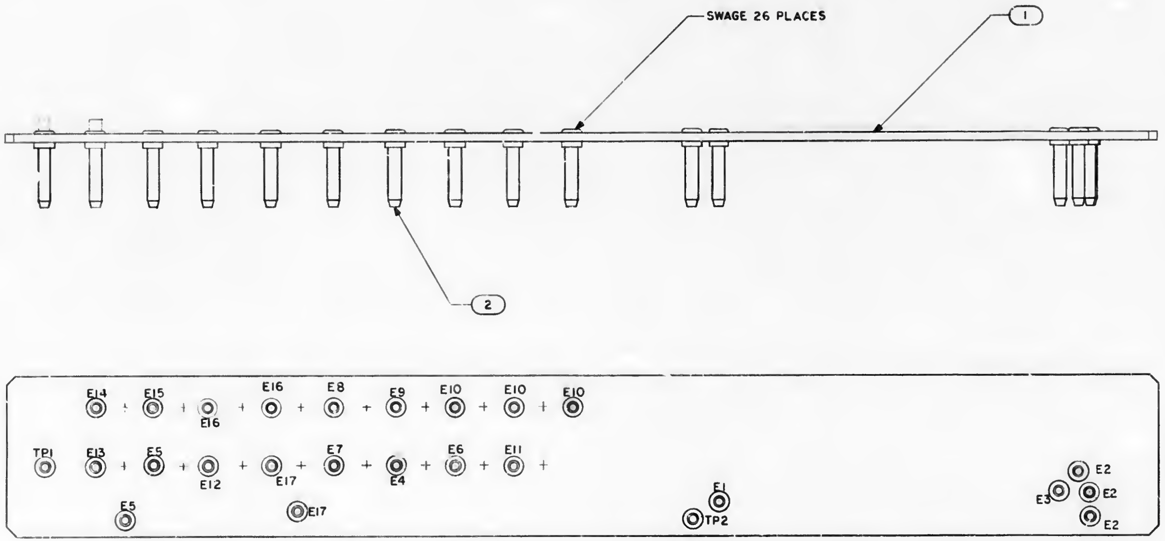

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. IDENTIFY WITH DRAWING NUMBER AND REVISION PER ND 1002019

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
26	1010845-004		CONTACT ELECTRICAL	2
1	1004318		WIRING BOARD "A"	1
011	LIST OF MATERIALS			

NEXT ASSY	USED ON
1003217	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING

MATERIAL —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

		DATE
DRAWN	Tom Bell	22 June 65
CHECKED	[illegible]	6-23-65
APPROVED		
APPROVED	Eldon C. Hall	25 June 65
APPROVED MIT	M G Mulley	6-28-65
APPROVED MSC	[illegible]	[illegible]

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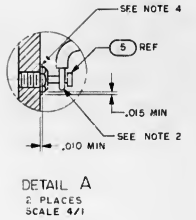
HOUSTON, TEXAS

WIRING BOARD ASSEMBLY
G & N FAILURE DETECT

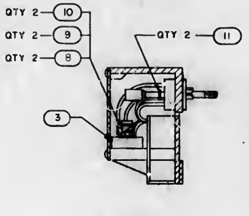
CODE IDENT NO.	SIZE	DRAWING NO.
80230	D	1003218

SCALE 5/1 SHEET 1 OF 1

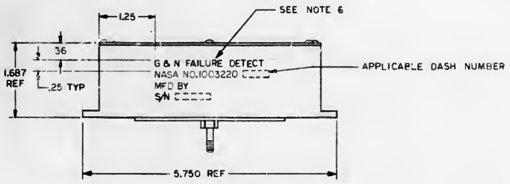
		R. VISIONS 20274				
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 21345				
B		REVISED PER TDRR 224-1				
C		REVISED PER TDRR 23128				
D		REVISED PER TDRR 23633				
E		REVISED PER TDRR 24950				

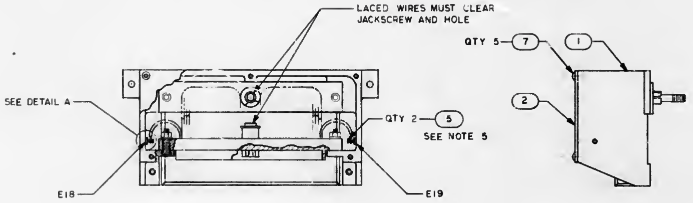


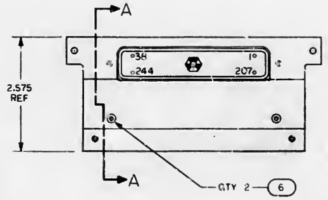
DETAIL A
2 PLACES
SCALE 4/1

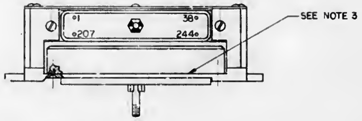


SECTION A-A









NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. SOLDER PER ND1002071 USING SOLDER PER ND1002075
3. BOND G&N FAILURE DETECT MOD OF FIND NO.3 TO FIND NO.1 PER ND1002004 TYPE V
4. SEAL FIND NO.5 TO FIND NO.1 PER ND1002004 TYPE VI
5. MOUNTING TORQUE FOR FIND NO.5 TO BE 15-20 INCH OUNCES
6. MARK .140/.100 HIGH WHITE CHARACTERS PER ND1002019 AND ND1002122, TYPE II, CLASS 2 AND SERIALIZE PER ND1002023 USING INK 1006271-1
7. COMPLETED ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH AND SHALL MEET ALL THE REQUIREMENTS OF PS.1003220

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
╳	1006184	WIRING DIAGRAM	REF
2	MS16633-4009	RING, RETAINING	11
2	MS15795-803	WASHER, FLAT	10
2	1010628-18	SCREW, FLAT HEAD, SELF LOCKING	9
2	MS35649-44	NUT	8
5	MS51957-13	SCREW, PAN HD	7
2	1010628-1	SCREW, FLAT HEAD SELF LOCKING	6
2	1004615-2	TERMINAL	5
~~1~~	~~1003217~~	~~G & N FAILURE DETECT MODULE ASSY~~	4
1	1005731-011	CABLE ASSY	3
1	1004316	COVER TOP	2
1	1004315	FRAME	1
-011	LIST OF MATERIALS		

1003561	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± —— DECIMALS ±.03 ANGLES ± ——
DO NOT SCALE THIS DRAWING

MATERIAL
——

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INSTRUMENTATION LAB
CAMBRIDGE, MASS.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN Eloy Gross 18 JUNE 65
CHECKED
APPROVED
APPROVED 18 Jan
APPROVED MIT
APPROVED MSC
DATE

G & N FAILURE DETECT ASSY

CODE IDENT NO 80230
SIZE E
DRAWING NO. 1003220
SCALE 1/1
SHEET 1 OF 1

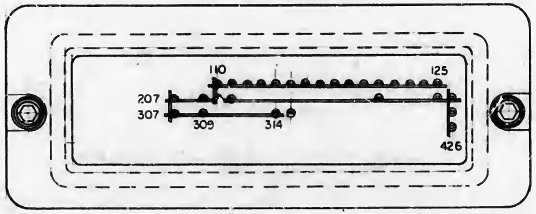
NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

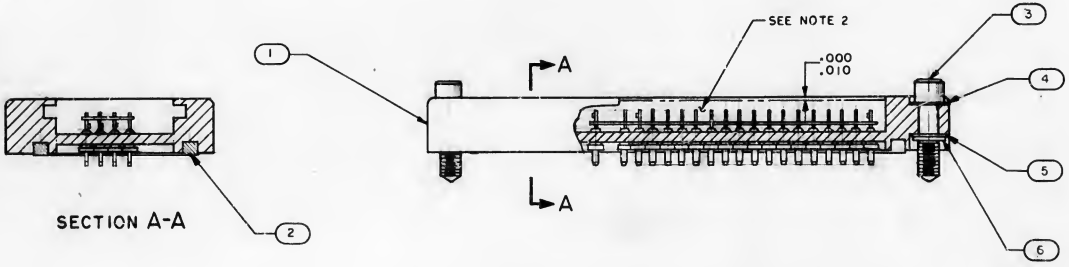
REVISIONS TDRR 32254

SYM	ZONE	DESCRIPTION	DR	CK	DATE	APPROVED

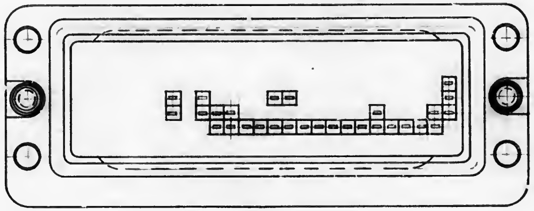
SIGNAL CHART

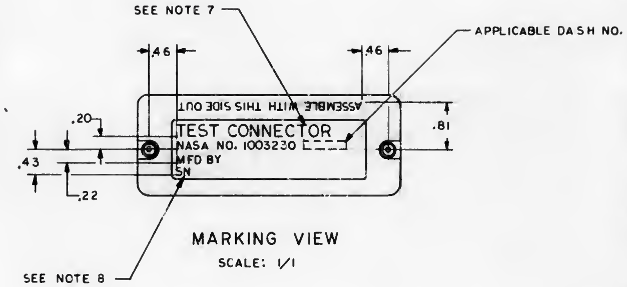
PIN NO.	SIGNAL	REMARKS
110	MDT01	SEE NOTE 3
111	MDT02	
112	MDT03	
113	MDT04	
114	MDT05	
115	MDT06	
116	MDT07	
117	MDT08	
118	MDT09	
119	MDT10	
120	MDT11	
121	MDT12	
122	MDT13	
123	MDT14	
124	MDT15	
125	MDT16	
207	MLOAD	
209	MNHNC	
210	MNHRPT	
221	MREAD	
225	MSBSTP	
307	MSTP	
309	MSTRT	
314	MTCSAI	
226	OVDC	
326	OVDC	
426	OVDC	
211	MC	





SECTION A-A





MARKING VIEW

SCALE: 1/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70320
2. ENCAPSULATE PER ND 1002002. REMOVE FLASHING
3. PINS IN SIGNAL CHART ARE CONNECTED TOGETHER USING FIND NO. 7 AS SHOWN
4. WELD PER ND 1002005
5. UNLESS OTHERWISE SPECIFIED ALL WIRING SHALL BE IN ACCORDANCE WITH ND 1002069
6. AR DENOTES AS REQUIRED
7. MARK .18/.20 HIGH WHITE CHARACTERS PER ND 1002019 AND ND 1002122 TYPE II CLASS 2 USING INK 1006271-1
8. MARK .10/.08 WHITE CHARACTERS PER ND 1002019 AND ND 1002122 TYPE II CLASS 2 USING INK 1006271-1. SERIALIZE PER ND 1002023

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006757-13		WIRE, ELECTRICAL	7
2	MS16633-4015		E RING	6
2	1004546-3		WASHER, FLAT	5
2	1004546-1		WASHER, FLAT	4
2	1004579-1		SCREW, JACKING	3
1	1004322		GASKET	2
1	1003231		CONNECTOR, FRAME ASSEMBLY	1

LIST OF MATERIALS

1003200	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .02 ANGLES ± —
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN [illegible] 10-6-66
CHECKED [illegible] 11 Oct 66
APPROVED
APPROVED Eldon C Hall 21 Oct 66
APPROVED [redacted] CCB [illegible]
APPROVED MSC [illegible] DATE [illegible]

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HOUSTON, TEXAS

TEST
CONNECTOR ASSEMBLY

CODE IDENT NO. 80230
SIZE D
DRAWING NO. 1003230
SCALE 2/1
SHEET 1 OF 1

1003230

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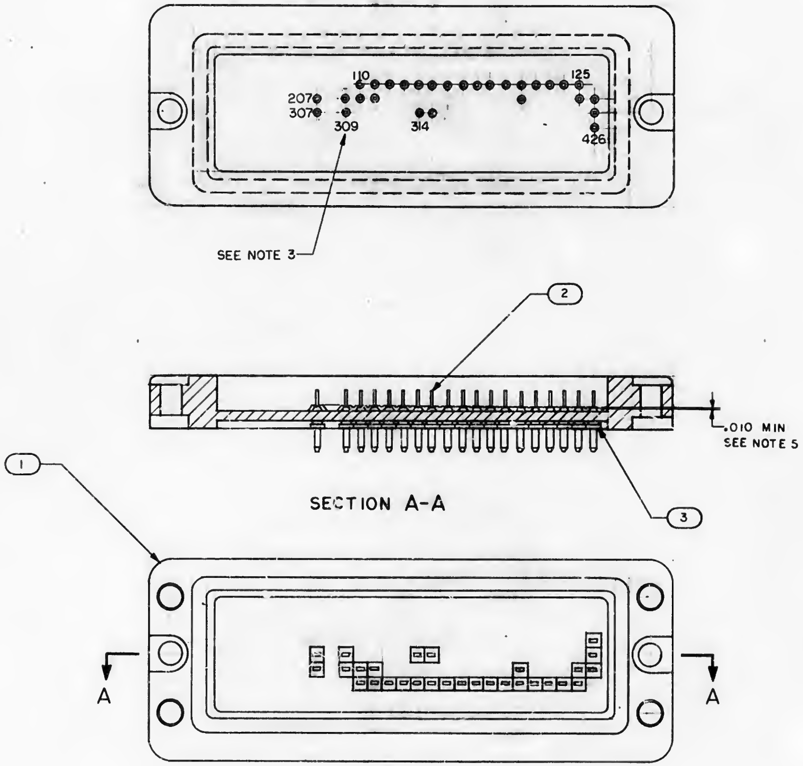
REVISIONS TDRR 32254

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70320
2. ASSEMBLE FIND NO.2 AND FIND NO.3 TO FIND NO.1 PER ND 1002136
3. MARK .05/.07 WHITE CHARACTERS PER ND1002019 AND ND1002122, TYPE II, CLASS 2
4. IDENTIFY WITH PART NO. PER ND1002019
5. SEAL FIND NO.2 AND FIND NO.3 TO FIND NO.1 PER ND1002004 TYPE VI

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
29	1006775		INSULATOR, WRAPOST, MALE	3
29	1006782-6		CONTACT, WRAPOST, MALE	2
1	1004323		CONNECTOR, FRAME	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003230	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN F. L. Eckert 10-66
CHECKED R. P. Kingsbury 11oct66
APPROVED
APPROVED Eldon C. Hall 21Oct66

APPROVED CCB
APPROVED MSC 10/25/66
DATE

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HOUSTON, TEXAS

FRAME ASSEMBLY
TEST CONNECTOR

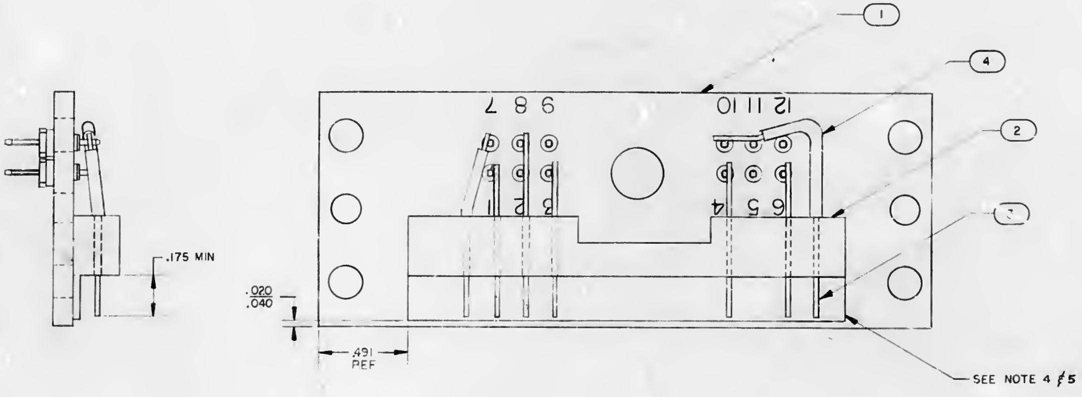
CODE IDENT NO. 80230
SIZE D
DRAWING NO. 1003231
SCALE 2/1
SHEET 1 OF 1

1003231

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 05178

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05781	11 Jan 64	WR
B	REVISED PER TDRR 06953 DR Bennett CHK	9 Nov 64	Huc



NOTES:

1. INTERPRET DWG IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND1002003 & ND1002005
3. *DENOTES LENGTH IN FEET
4. STAKE PER ND1002004
5. FIND NO.2 SHOULD BE POSITIONED APPROXIMATELY AS SHOWN

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
*	0.1	1006776-22	INSULATION, SLEEVING	4
*	0.5	1006757-13	WIRE, ELECTRICAL	3
	1	1004604	BLOCK, INSULATOR	2
	1	1003541	PLATE, CONNECTOR	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003532	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN G.A. Baker DATE 12 DEC 63
CHECKED Q.R. Boga 13 DEC 63
APPROVAL
APPROVAL E.J. Dagg 12/16/63
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible] 12/17/63

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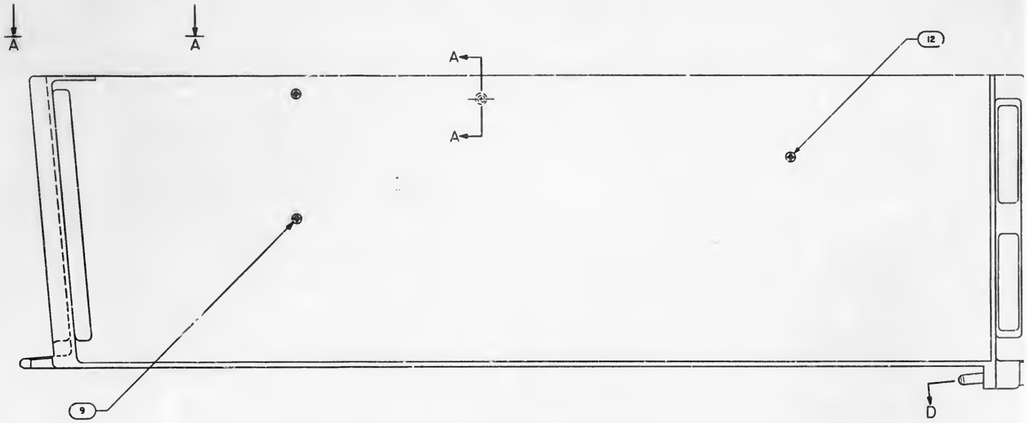
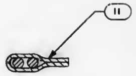
CONNECTOR PLATE ASSY
POWER SUPPLY
AGC DSKY NAV & MAIN

CODE IDENT NO. —— SIZE D NASA DRAWING NO. 1003450
SCALE 4/1 WT SHEET 1 OF 1

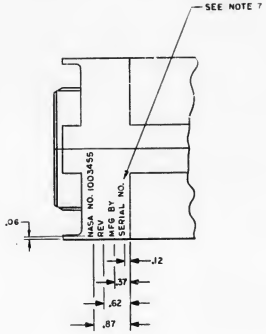
1003450 B

MASTER

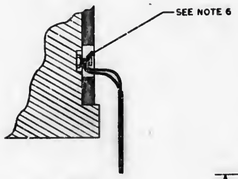




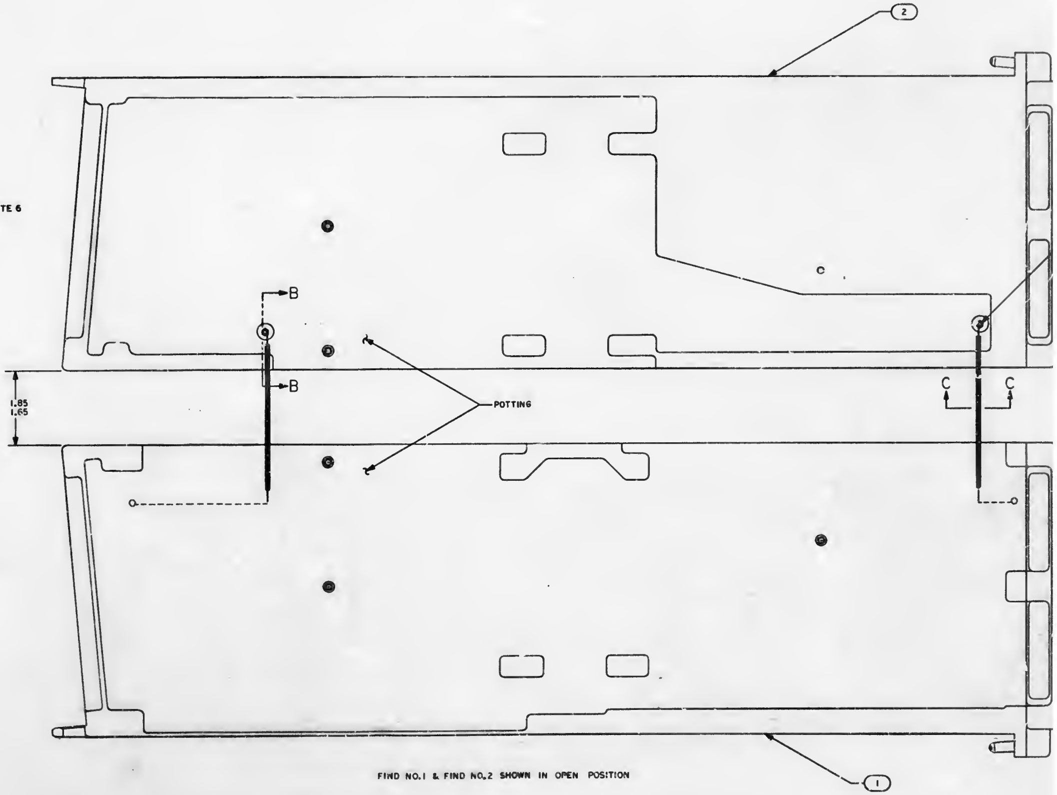
SECTION C-C
SCALE 8/1



VIEW A-A



SECTION B-B
SCALE 2/1

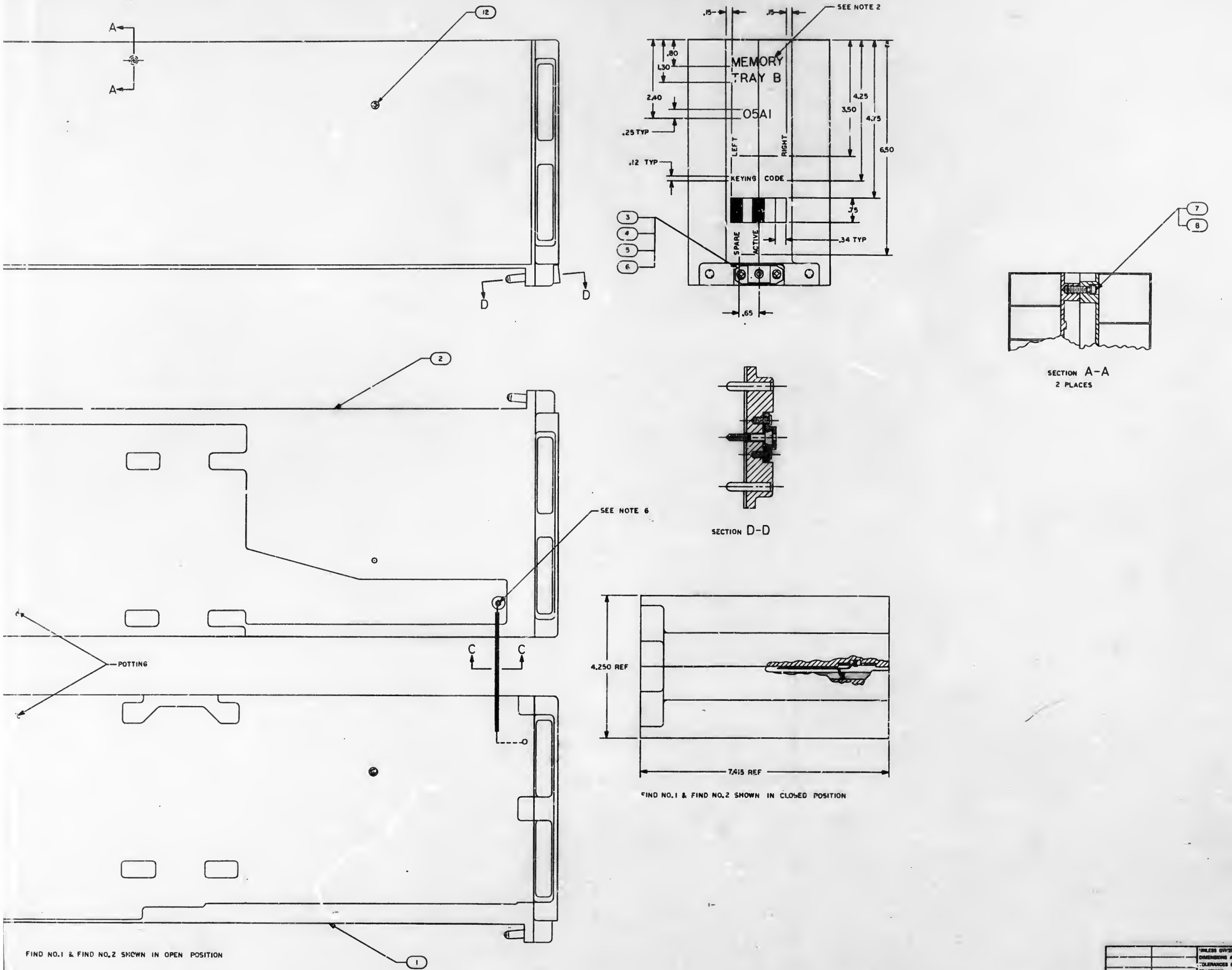


FIND NO.1 & FIND NO.2 SHOWN IN OPEN POSITION

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARKING AND LETTERING TO BE BLACK PER ND1002019 AND 1002122 TYPE II CLASS I
3. COAT ALL MATING SURFACES OF FIND NO.1 & FIND NO.2 WITH FIND NO. 10
4. AR DENOTES AS REQUIRED
5. UNLESS OTHERWISE SPECIFIED, TORQUE ALL TRAY HALF RETAINING SCREWS 15 TO 19 INCH POUNDS
6. SOLDER PER ND 1002071
7. MARK AND SERIALIZE .12 HIGH WHITE PER ND 1002023

SYM	DESCRIPTION	DATE	APPROVAL
—	RELEASED PER TDRR 09844		
A	INACTIVE PER TDRR 10889 DR R N Sulley CHK RPB	7/2/6?	
B	REVISED PER TDRR 10732 DR R Bourdeau CHK	8/13/64	



Ⓑ INACTIVE AFTER SYSTEMS NO. 7
FOR NEW PROCUREMENT USE 1003468

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	MS24693-PC7	SCREW, MACHINE FLAT HD	12
AR	1006826-3	INSULATION TAPE, ELECTRICAL	11
AR	1006879	SILICONE COMPOUND	10
2	MS24693-PC8	SCREW, MACHINE FLAT HD	9
2	1004546-3	WASHER, FLAT	8
2	1004260	SCREW	7
1	1004262	PLATE, BACKING	6
2	NAS1402-2	SCREW, MACHINE PAN HD	5
1	1004261	SCREW, JACK	4
1	1004254	RETAINER, JACKSCREW	3
1	1003176	TRAY B WIRED ASSEMBLY, LEFT HAND	2
1	1003177	TRAY B WIRED ASSEMBLY, RIGHT HAND	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003164	

APPLICATION

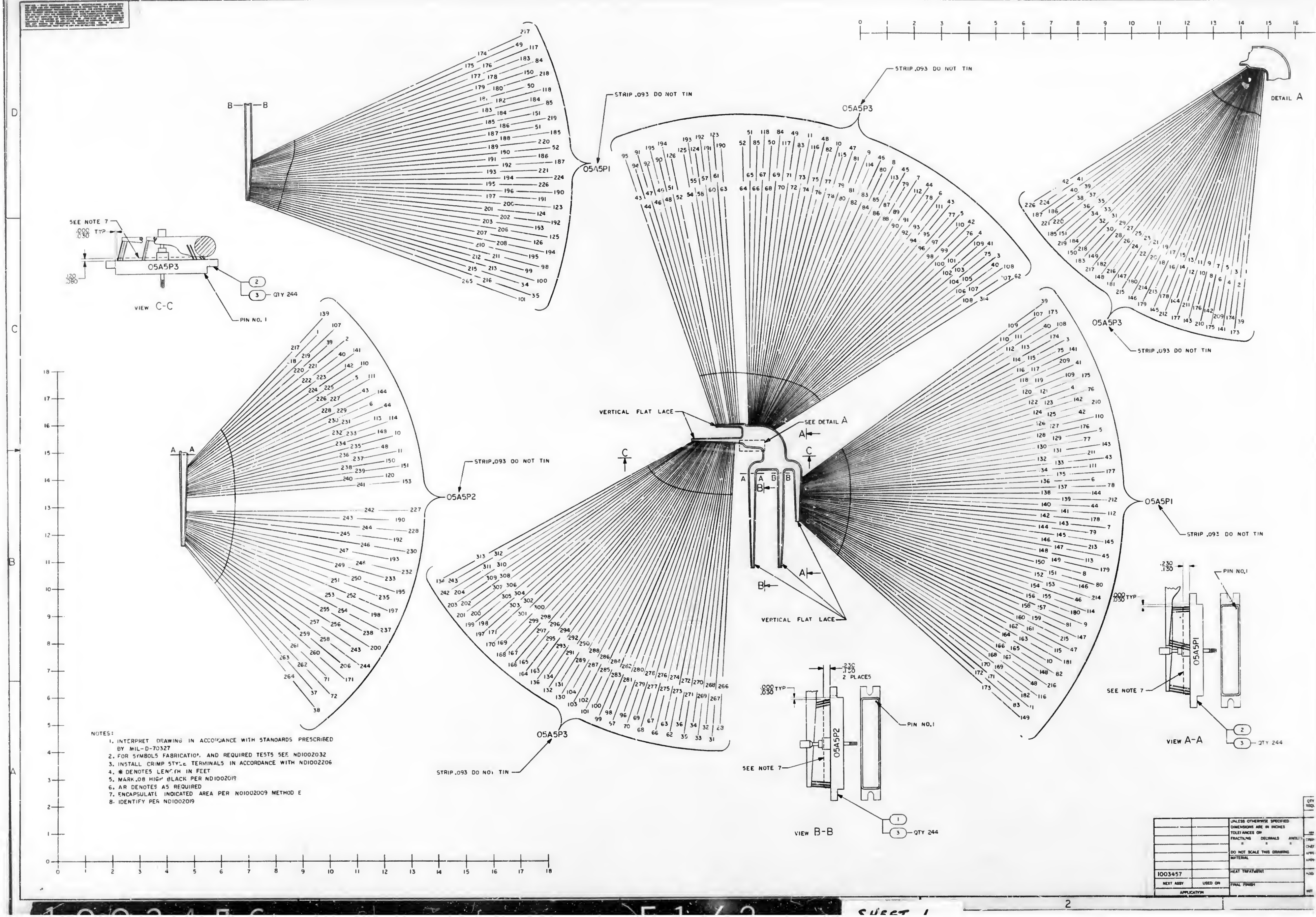
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN R Bourdeau DATE 2-12-64
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TRAY B
SUBASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003455
SCALE 1/1
WT
SHEET 1 OF 1



NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FOR SYMBOLS FABRICATION AND REQUIRED TESTS SEE ND1002032
3. INSTALL CRIMP STYLE TERMINALS IN ACCORDANCE WITH ND1002206
4. ✱ DENOTES LENGTH IN FEET
5. MARK .08 HIGH BLACK PER ND1002019
6. AR DENOTES AS REQUIRED
7. ENCAPSULATE INDICATED AREA PER N01002009 METHOD E
8. IDENTIFY PER ND1002019

1003457	
NEXT ASSY	USED ON
APPLICATION	

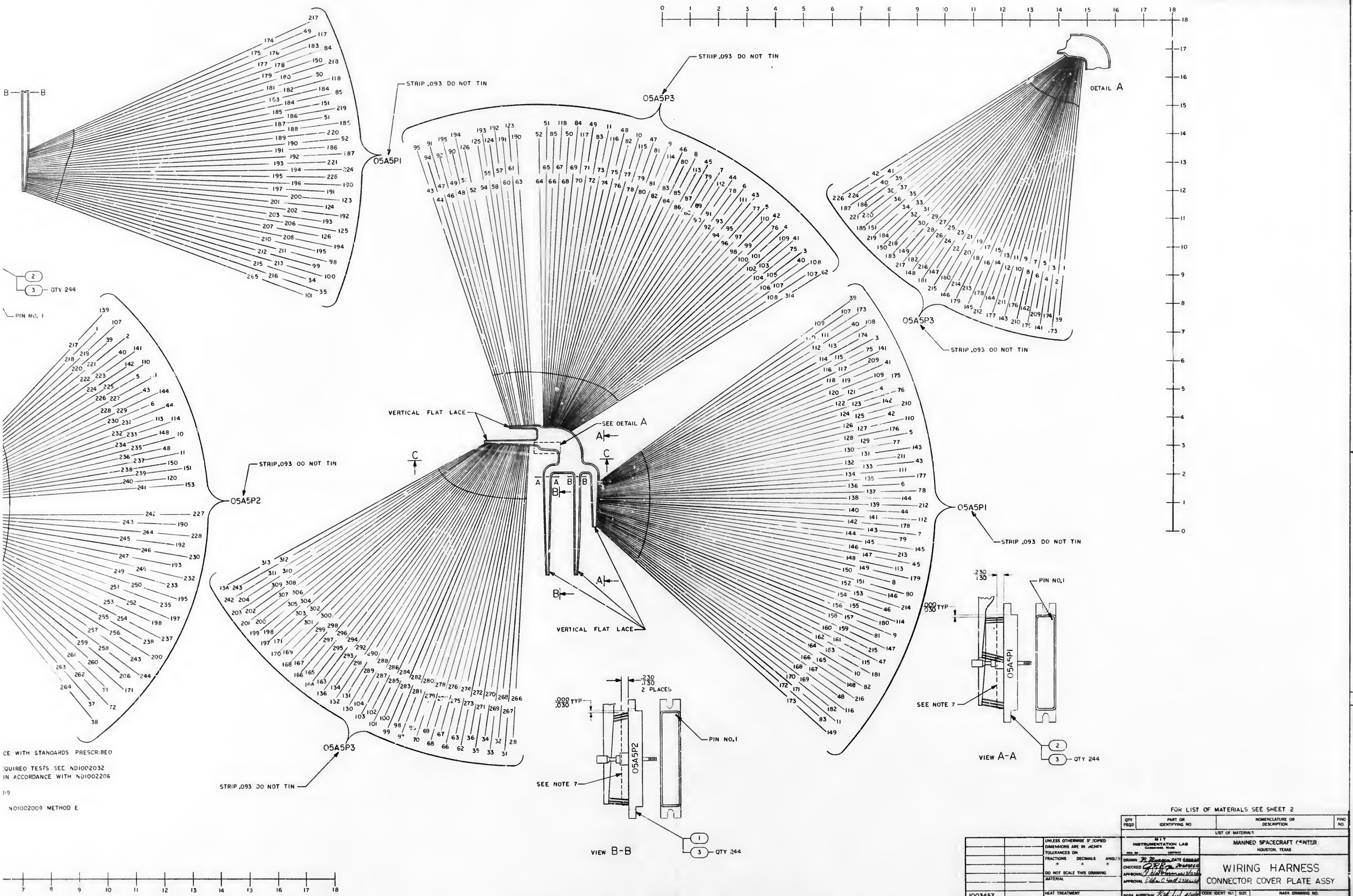
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

QTY REQD



CE WITH STANDARDS PRESCRIBED

QUIRED TESTS SEE ND1002032
IN ACCORDANCE WITH ND1002206

19

ND1002009 METHOD E

FOR LIST OF MATERIALS SEE SHEET 2

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1003457
NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN P. Musson DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

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HOUSTON, TEXAS

WIRING HARNESS
CONNECTOR COVER PLATE ASSY

CODE IDENT NO. — SIZE J NASA DRAWING NO. 1003456
SCALE 1/1 WT SHEET 1 OF 2

1003456 —

ASSEMBLY INFORMATION CHART

FROM REMARKS	FROM RUN NO.	DESCRIPTION COLOR	DESCRIPTION AWG	DESCRIPTION FIND NO.	TO RUN NO.	TO REMARKS
	1	WHT	26	7	109	
	2				111	
	3				114	
	4				117	
	5				118	
	6				121	
	7				124	
	8				125	
	9				128	
	10				131	
	11				132	
	12				135	
	13				138	
	14				139	
	15				142	
	16				145	
	17				146	
	18				149	
	19				153	
	20				152	
	21				156	
	22				160	
	23				159	
	24				163	
	25				167	
	26				166	
	27				170	
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	29				173	
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	72				172	
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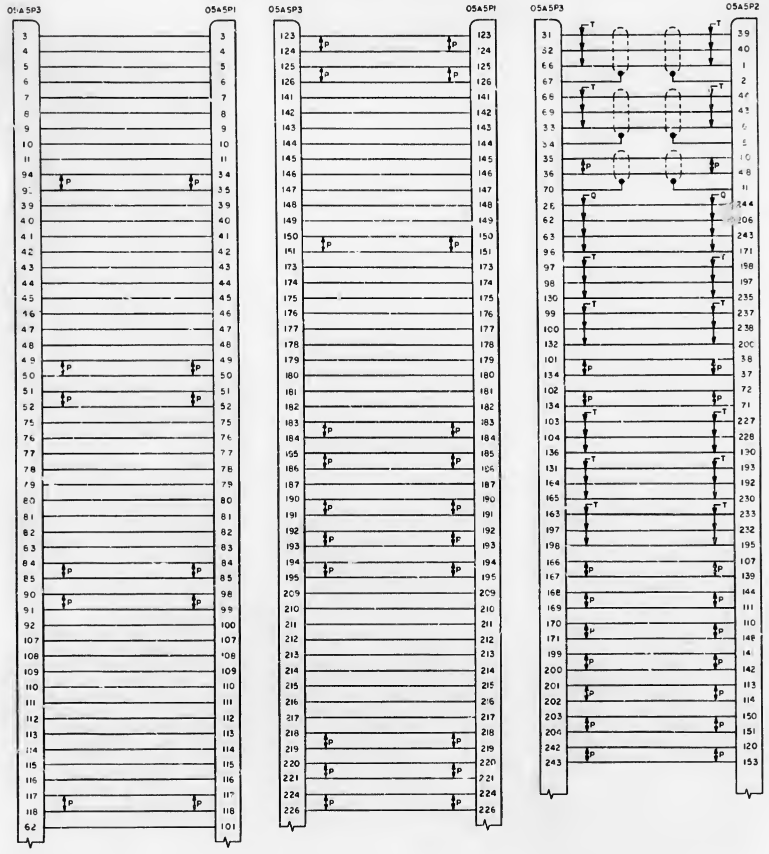
	90				141	
	91				140	
	92				137	
	93				136	
	94				134	
	95				133	
	96				130	
	97				129	
	98				127	
	99				126	
	100				123	
	101				122	
	102				120	
	103				119	
	104				116	
	105				115	
	106				112	
	107				113	
	108				110	
TWIST	30	WHT		7	177	TWIST
	33	RED		8	183	
	31	WHT		7	180	
	34	RED		8	186	
	32	WHT		7	179	
	35	RED		8	185	
	36	WHT		7	188	
	39	RED		8	191	
	37	WHT		7	189	
	38	RED		8	193	
	41	WHT		7	194	
	42	RED		8	195	
TWIST	43	RED		8	216	TWIST
	44	WHT		7	215	
	46	WHT		7	213	
TWIST	47	RED		8	212	TWIST
	48	WHT		7	211	
	49	RED		8	210	
	51	WHT		7	208	
	52	RED		8	207	
	54	WHT		7	206	
	55	RED		8	203	
	57	WHT		7	202	
	58	RED		8	201	
	61	WHT		7	200	
	60	RED		8	197	
	63	WHT		7	196	
	64	RED		8	190	
	65	WHT		7	167	
	66	RED		8	184	
	69	WHT		7	178	
	67	RED		8	182	
	70	WHT		7	176	
	68	RED		8	181	
	71	WHT		7	175	
TWIST	73	RED		8	171	TWIST
	77	WHT		7	164	
	314	WHT	26	7	265	

ASSEMBLY INFORMATION CHART

FROM REMARKS	FROM RUN NO.	DESCRIPTION COLOR	DESCRIPTION AWG	DESCRIPTION FIND NO.	TO RUN NO.	TO REMARKS
	267	RED	26	5	220	
	263	WHT			222	
	275	WHT			218	
ATTACH FIND NO.10 LG 2 3/4	276	SHLD			221	ATTACH FIND NO.10 LG 2 3/4
	269	WHT			230	
ATTACH FIND NO.10 LG 2 3/4	270	SHLD			226	ATTACH FIND NO.10 LG 2 3/4
	277	WHT			231	
	278	RED		5	228	
	271	RED		6	235	
	272	WHT		6	236	
ATTACH FIND NO.10 LG 2 3/4	279	SHLD		6	237	ATTACH FIND NO.10 LG 2 3/4
TWIST	266	WHT		7	258	TWIST
	273	RED		8	259	
	274	BLU		9	257	
	280	BLK		10	260	
	281	WHT		7	253	
	282	BLU		9	252	
	289	RED		8	251	
	283	RED		8	254	
	284	BLU		9	255	
	291	WHT		7	256	
	285	WHT		7	264	
	292	RED		8	263	
	286	WHT		7	262	
	313	RED		8	261	
	287	BLU		9	242	
	288	WHT		7	244	
	293	RED		8	243	
	290	WHT		7	247	
	295	BLU		9	245	
	296	RED		8	246	
	294	WHT		7	249	
	303	BLU		9	248	
	304	RED		8	250	
	297	RED		6	219	
	298	WHT		7	217	
	299	WHT		7	229	
	300	RED		8	227	
	301	WHT		7	225	
	302	RED		8	234	
	305	WHT		7	223	
	306	RED		8	224	
	307	WHT		7	232	
	308	RED		8	233	
	309	WHT		7	238	
	310	RED		8	239	
TWIST	311	RED		8	240	TWIST
	312	WHT	26	7	241	

ELECTRICAL SCHEMATIC



QTY REQD	
☒	1006183
AR	MIL-T-71
* 2	1010685-
* 6.5	1010685-
* 23	1010685-1
* 52	1010685-1
* 2.8	1010685-6
* 6.5	1010685-
732	1010738-
2	1010641-
1	1010641-

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EMBLY INFORMATION CHART				
DESCRIPTION			TO	
OLOR	AWG	FINO NO.	RUN NO.	REMARKS
WHT	26	7	109	
			111	
			114	
			117	
			118	
			121	
			124	
			125	
			128	
			131	
			132	
			135	
			138	
			139	
			142	
			145	
			146	
			149	
			153	
			152	
			156	
			160	
			159	
			163	
			167	
			166	
			170	
			174	
			173	
			192	
			172	
			169	
			168	
			165	
			162	
			161	
			158	
			157	
			155	
			154	
			151	
			150	
			148	
			147	
			144	
			143	
			141	
			140	
			137	
			136	
			134	
			133	
			130	
			129	
			127	
			126	
			123	
			122	
			120	
			119	
			116	
			115	
			112	
			113	
			110	
WHT		7	177	TWIST
RED		8	183	
WHT		7	180	
RED		8	186	
WHT		7	179	
RED		8	185	
WHT		7	188	
RED		8	191	
WHT		7	189	
RED		8	193	
WHT		7	194	
RED		8	195	
RED		8	216	TWIST
WHT		7	215	
WHT		7	213	
RED		8	212	TWIST
WHT		7	211	
RED		8	210	
WHT		7	208	
RED		8	207	
WHT		7	206	
RED		8	203	
WHT		7	202	
RED		8	201	
WHT		7	200	
RED		8	197	
WHT		7	196	
RED		8	190	
WHT		7	187	
RED		8	184	
WHT		7	178	
RED		8	182	
WHT		7	176	
RED		8	181	
WHT		7	175	
RED		8	171	TWIST
WHT		7	164	
HT	26	7	265	

ASSEMBLY INFORMATION CHART						
FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	267	RED	26	5	220	
	268	WHT			222	
	275	WHT			218	
ATTACH FIND NO.10 LG 2 3/4	276	SHLD			221	ATTACH FIND NO.10 LG 2 3/4
	269	WHT			230	
ATTACH FIND NO.10 LG 2 3/4	270	SHLD			226	ATTACH FIND NO.10 LG 2 3/4
	277	WHT			231	
	278	RED		5	228	
	271	RED		6	235	
	272	WHT		6	236	
ATTACH FIND NO.10 LG 2 3/4	279	SHLD		6	237	ATTACH FIND NO.10 LG 2 3/4
TWIST	266	WHT		7	258	TWIST
	273	RED		8	259	
	274	BLU		9	257	
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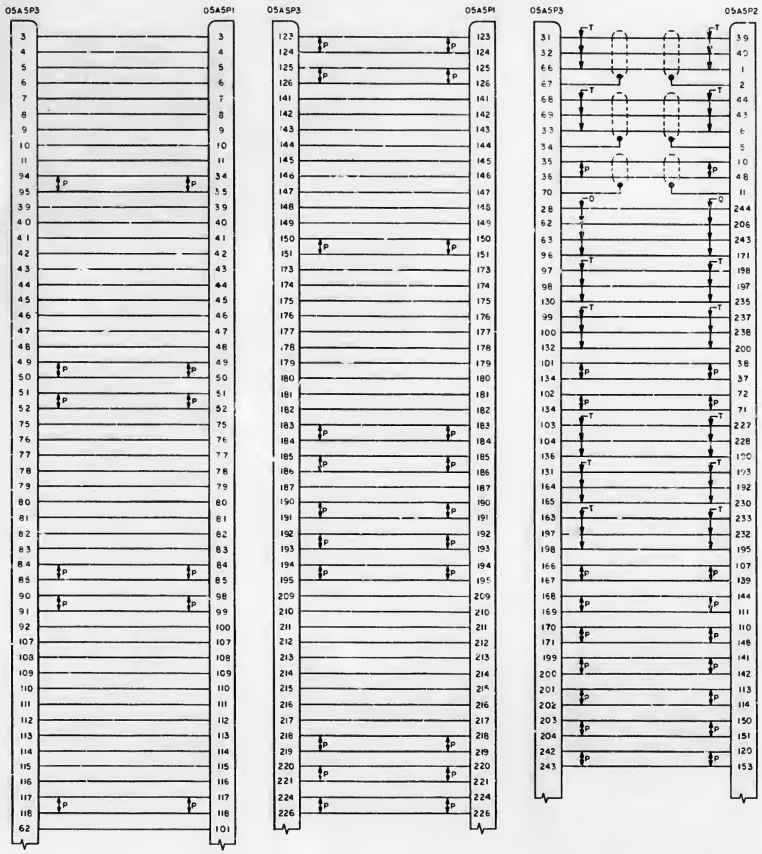
	283	RED		8	254	
	284	BLU		9	255	
	291	WHT		7	256	
	285	WHT		7	264	
	292	RED		8	263	
	286	WHT		7	262	
	313	RED		8	261	
	287	BLU		9	242	
	288	WHT		7	244	
	293	RED		8	243	
	290	WHT		7	247	
	295	BLU		9	245	
	296	RED		8	246	
	294	WHT		7	249	
	303	BLU		9	248	
	304	RED		8	250	
	297	RED		8	219	
	298	WHT		7	217	
	299	WHT		7	229	
	300	RED		8	227	
	301	WHT		7	225	
	302	RED		8	234	
	305	WHT		7	223	
	306	RED		8	224	
	307	WHT		7	232	
	308	RED		8	233	
	309	WHT		7	238	
	310	RED		8	239	
TWIST	311	RED		8	240	TWIST
	312	WHT	26	7	241	

ELECTRICAL SCHEMATIC



☒	1006183	INTERCONNECTION DIAGRAM	REF
AR	MIL-T-713, TYPE P, 2	LACING WAXED	11
* 2	1010685-13	WIRE, ELEC, AWG 26 BLACK	10
* 6.5	1010685-12	WIRE, ELEC, AWG 26 BLUE	9
* 23	1010685-10	WIRE, ELEC, AWG 26 RED	8
* 52	1010685-11	WIRE, ELEC, AWG 26 WHITE	7
* 2.8	1010685-8	WIRE, ELEC, AWG 26 2 COND SHLD	6
* 6.5	1010685-9	WIRE, ELEC, AWG 26 3 COND SHLD	5
			4
732	1010738-1	CONTACT, ELEC, PLUG	3
2	1010641-144	CONNECTOR, PLUG	2
1	1010641-243	CONNECTOR, PLUG	1
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

REVISIONS 07643			
SYM	DESCRIPTION	DATE	APPROVAL

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APPLICATION	

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HOUSTON, TEXAS

WIRING HARNESS
CONNECTOR COVER PLATE ASSY

CODE IDENT NO —
SIZE J
NASA DRAWING NO 1003456
SCALE 1/1
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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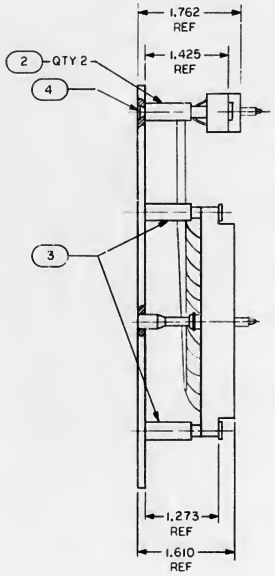
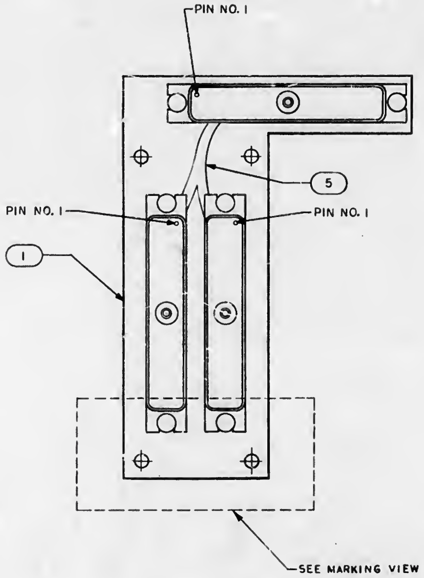
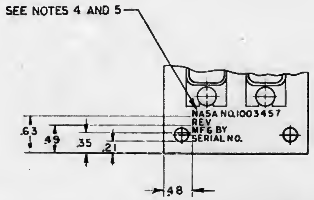
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	INITIAL RELEASE PER TDRR 07643		
A	REVISED PER TDRR 11493 DR J.P. Leonard CHK RTM	8/21/64	HWC
B	REVISED PER TDRR 13072 DR CHK RTM	10/7/64	HC







MARKING VIEW

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. PART DESIGN CONTROLLED BY NAA ICD MH01-01002-116
3. ELECTRICAL REQUIREMENTS:
   UNIT SHALL BE HI-POTTED AT 500VDC FROM EACH INDIVIDUAL CONDUCTOR TO ALL OTHER TO ALL OTHER CONDUCTORS AND TO FRAME
   UNIT SHALL BE CONTINUITY TESTED FOR ONE OHM OR LESS RESISTANCE BETWEEN TERMINALS PER 1006138
4. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2 USING 1010729-3
5. SERIALIZE PER ND1002023

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
1	1003456	WIRING HARNESS C AGC PSA	5
6	1010477-25	SCREW, FLAT HD SOCKET, HEX	4
4	1004276	SPACER, SPECIAL	3
2	1004632	SPACER, SPECIAL	2
1	1003156	CONNECTOR COVER PLATE	1

LIST OF MATERIALS

1003186	1003400
NEXT ASSY	USED ON
APPLICATION	

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CONNECTOR COVER PLATE ASSEMBLY

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003457
SCALE 1/1
WT
SHEET 1 OF 1

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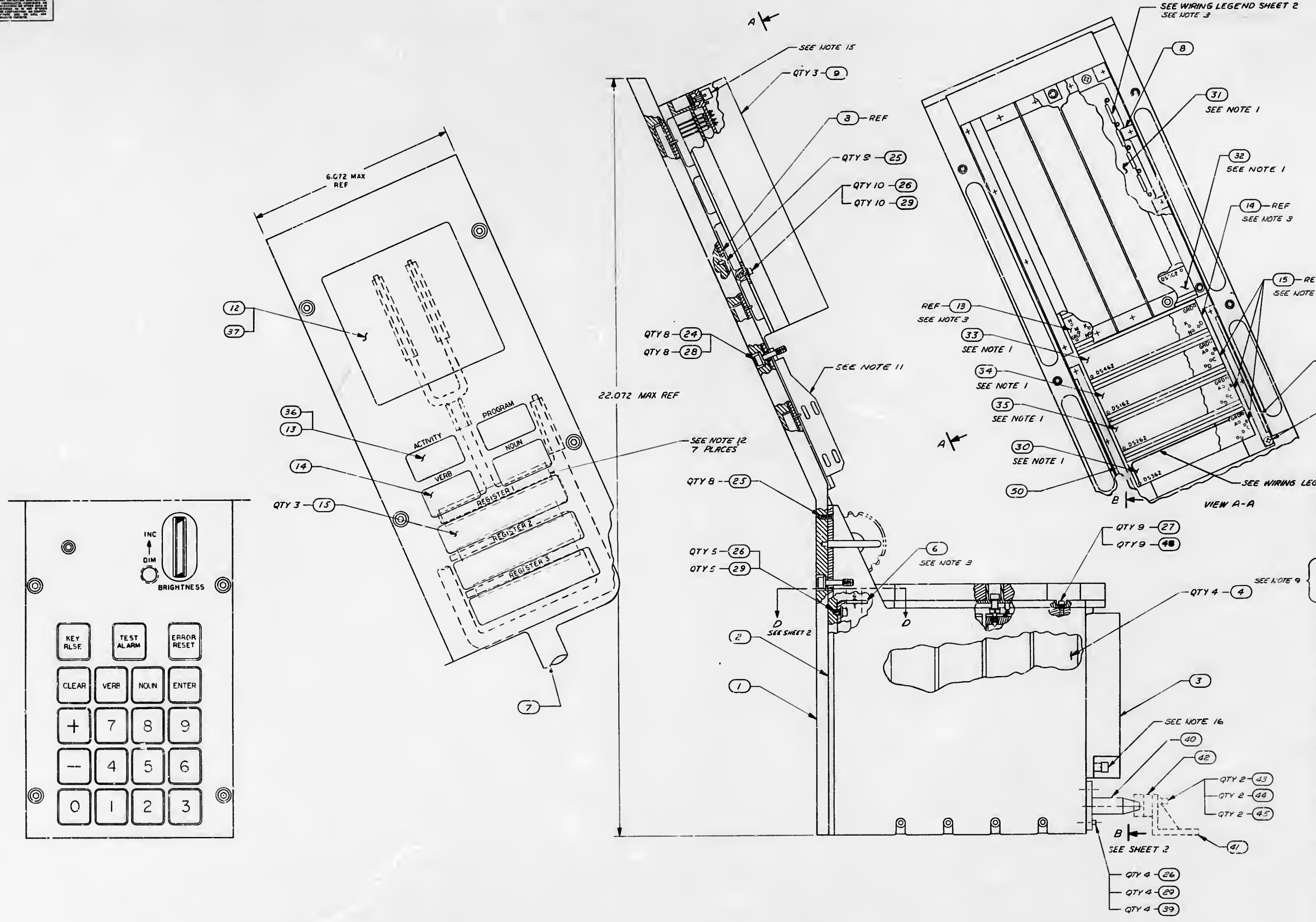
REVISIONS 07841

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 10127 DR [illegible] CHK A.R.B.	7/6/64	[illegible]
B	REVISED PER TDRR 11244 DR [illegible] CHK K.K.C. RTM	9/1/64	[illegible]
C	REVISED PER TDRR 11495 DR J.P. Leonard CHK [illegible] RTM	9/17/64	[illegible]
D	REVISED PER TDRR 12772 DR R.B. [illegible] CHK [illegible] RTM	9/28/64	[illegible]
E	REVISED PER TDRR 15111 DR [illegible] CHK [illegible] DM	[illegible]	[illegible]



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1003100	AGC DSKY NAV PANEL OUTLINE	REF
4	MS35200-15	SCREW, FLAT HD	51
1	1004636	RETAINER, L.H.	50
1	1004635	RETAINER, R.H.	49
9	NAS 620-4	WASHER, FLAT	48
4	MS16200-1	SCREW, PAN HEAD	47
1	10046[illegible]9	PLATE, IDENT	46
2	MS35337-80	WASHER, LOCK	45
2	MS15795-807	WASHER, FLAT	44
2	MS16995-26	SCREW, SOCKET HEAD	43
1	1004609	FLANGE	42
1	1004607	BRACKET, ANGLE	41
1	1003451	ALIGNMENT PIN ASSY	40
4	MS35337-78	WASHER, LOCK	39
*1.0	MIL-T-713	CORD, LACING	38
1	1004591	PHOTO MA, FRONT, INDICATOR DISPLAY	37
1	1004590	PHOTO MA, FRONT, PROGRAM DISPLAY	36
1	1004128	PHOTO MA REGISTER NO. 2 DIS	35
1	1004126	PHOTO MA REGISTER NO. 1 DIS	34
1	1004148	PHOTO MASTER VERB-NOUN DIS	33
1	1004147	PHOTO MASTER PROGRAM DIS	32
1	1004149	PHOTO MASTER INDICATOR DIS	31
1	1004129	PHOTO MA, REGISTER NO. 3 DIS	30
25	MS15795-803	WASHER, FLAT	29
8	MS15795-808	WASHER, FLAT	28
9	MS16995-10	SCREW, SOCKET HD	27
25	MS16995-9	SCREW, SOCKET HD	26
17	MS35200-13	SCREW, FLAT HD	25
8	1004545	SCREW, CAPTIVE	24
2	MS51053-213	SCREW, SET	23
2	MS16633-4012	RING, RETAINING	22
2	1004119	CONNECTOR STUD	21
*3.0	1006737 A2	WIRE, ELECTRICAL	20
1	1004114	THUMB WHEEL	19
1	1006736	RESISTOR, VAR	18
1	1004116	BRACKET	17
☒	1006167	INTERCONNECTING DIAGRAM	REF
3	1006813	INDICATOR, DIGITAL DISPLAY	15
1	1006817	INDICATOR, DIGITAL DISPLAY	14
1	1006818	INDICATOR, DIGITAL DISPLAY	13
1	1006819	INDICATOR, DIGITAL DISPLAY	12
*.25	SEE NOTE 7	SLEEVING	11
*.50	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	10
3	1003530	DECODING MODULE ASSY	9
1	1003534	E/L HOLD DOWN ASSY	8
1	1003533	WIRING HARNESS	7
1	1003097	KEYBOARD MODULE ASSY	6
1	1004547	BRACKET, CABLE SUPPORT	5
4	1003098	RELAY MODULE ASSY	4
1	1003532	POWER SUPPLY ASSY	3
1	1004539	HOUSING, RELAY MODULE	2
1	1004141	PANEL, FRONT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003400	
APPLICATION	

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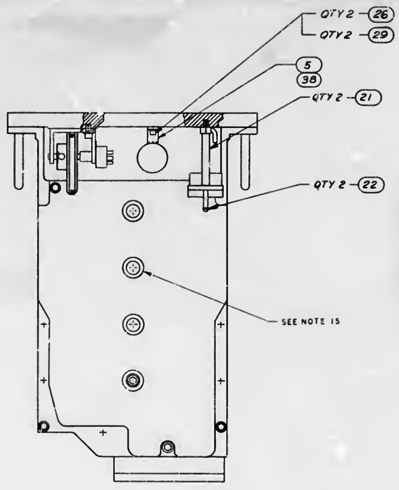
AGC NAV DSKY ASSY

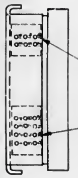
CODE IDENT NO —
SIZE J
NASA DRAWING NO 1003458
SCALE 1/1
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

REVISIONS 07221

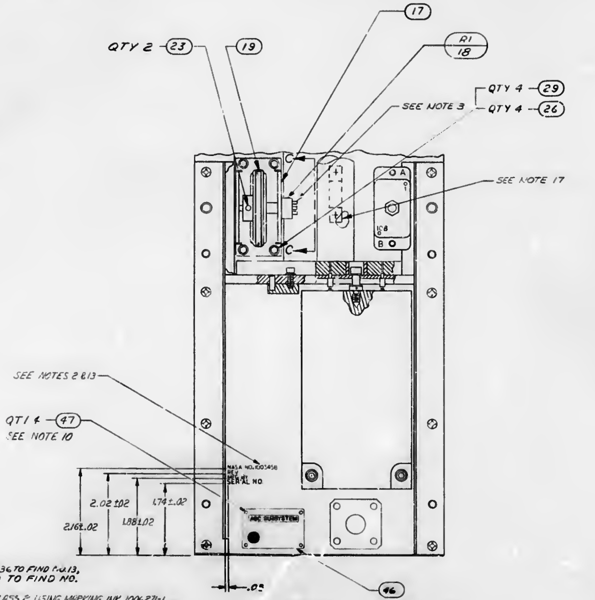
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 10127 DR D. Blumg CHK A.R.B.	4/7/64	HWC
B	REVISE PER TDRR 11249 DR Bennett CHK R.H.S. RTM	9/10/64	HWC
C	REVISED PER TDRR 11495 DR S.P. Leonard CHK CWH RTM	[illegible]	[illegible]
D	REVISED PER TDRR 12772 DR P. Rushford CHK CWH RTM	3/25/64	HWC
E	REVISED PER TDRR 15111 DR A. Lapka CHK CWH BTM	[illegible]	[illegible]





VIEW D-D

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
DS1A1	WHT	30	20	DS1C1
DS2A1	↑	↑	↑	DS2C1
DS3A1				DS3C1
DS4G1				DS4G2
DS3G1				DS3G2
DS5G1				DS5G2
DS2G1	↓	↓	↓	DS2G2
DS1G1	WHT	30	20	DS1G2
DS6G1	BUS&SLV	26	10 & 11	DS6G2
DS6G2	↑	↑	↑	DS6G3
DS6G3	↓	↓	↓	DS6G4
DS6G4	BUS&SLV	26	10 & 11	DS6G5



VIEW B-B

VIEW C-C

NOTES

1. BOND FIND NO.31 & 37 TO FIND NO.12, FIND NO. 32 & 36 TO FIND NO.13, FIND NO.33 TO FIND NO.14 & FIND NO. 34, 35 & 30 TO FIND NO. 15 PER ND 1002004
2. MARK .093 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2 USING MARKING INK 1006271-1
3. SOLDER PER ND1002071
4. ~~MIL-W-16878, TYPE E, CL 1, AWG 26, COLOR WHITE~~
5. WIRE PER ND1002032
6. AR DENOTES AS REQUIRED
7. MIL-I-631 TYPE F, FORM U, GRADE A, CLASS I, CATEGORY I, AWG SIZE NO 24
8. * DENOTES LENGTH IN FEET
9. FIND NO.41 THRU 45 ARE TO BE PACKAGED & IDENTIFIED PER ND1002019
10. SECURE FIND 47 USING MIL-S-22473, GRADE H
11. FIND NO.7 TO BE LACED TO FIND NO. 49 & 50 USING FIND NO. 38
12. SECURE HARNESS IN INDICATED AREA BY STAKING PER ND 1002004
13. SERIALIZE PER ND1002023
14. FIND NO. 46 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 WITH ASSOCIATED DASH NO.
15. MOUNTING TORQUE ON JACKING SCREWS (1004579) TO BE 15-19 IN. LBS.
16. MOUNTING TORQUE ON JACKING SCREWS (1004583) TO BE 3-4 IN LBS.
17. FIND NO.7 TO BE LACED TO FIND NO.5 USING FIND NO.38

REFERENCE

1. 1020105: NAV DSKY TO HANDLING FIXTURE ASSEMBLY

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON

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CODE IDENT NO —
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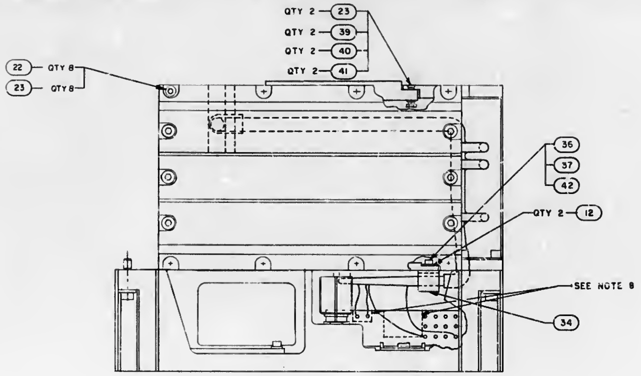
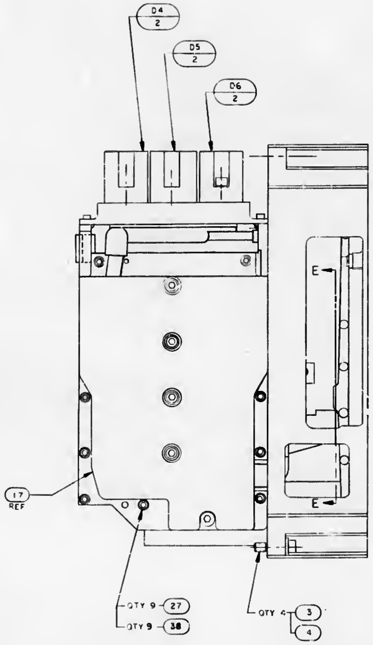
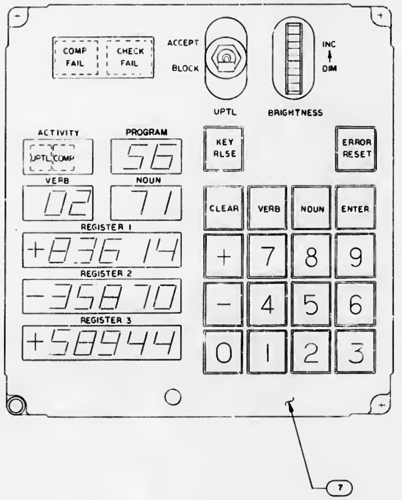
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

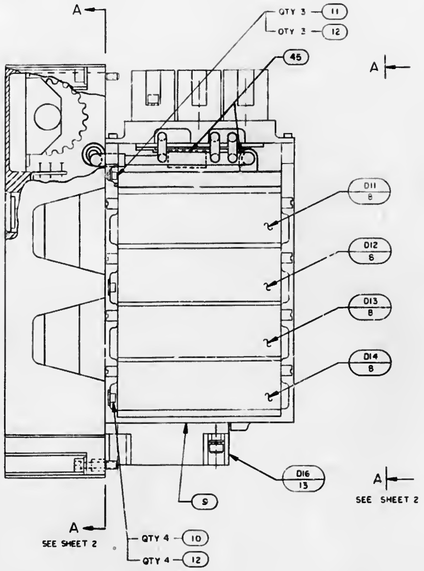
[illegible]

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS 07891		
A	REVISED PER TORR 07626 DR [illegible] CHK A.R.B	5/9/69	[illegible]
B	REVISED PER TORR 11244 DR [illegible] CHK R.E., RTM	9/9/69	[illegible]
C	REVISED PER TORR 11495 DR J.P. Leonard CHK [illegible] RTM	9/17/69	[illegible]









NOTES

1. SOLDER PER MSFC-PROC-158
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
3. MIL-I-631 TYPE F FORM U a, GRADE a, CLASS 1, CATEGORY I, AWG SIZE NO. 24
4. BOND FIND NO. 28 TO FIND NO. 16 & FIND NO. 1 TO FIND NO. 15 PER ND1002004
5. MARK .09 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS I APPROX WHERE SHOWN
6. * DENOTES LENGTH IN FEET.
7. SECURE FIND NO. 44 USING MIL-S-22473B
8. SECURE HARNESS IN INDICATED AREA BY STAKING PER ND1002004
9. FIND NO. 43 TO BE USED FOR IDENTIFICATION OF 1003400 AND ASSOCIATED DASH NO.
10. SERIALIZE PER ND1002023

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1003400	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

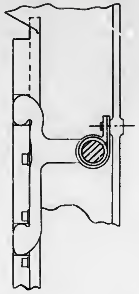
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 6-30-69
APPROVAL
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

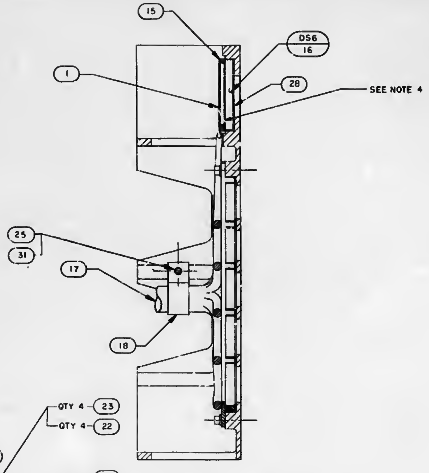
AGC KEYBOARD & DISPLAY
MAIN PANEL

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003459
SCALE 1/1
SHEET 1 OF 2

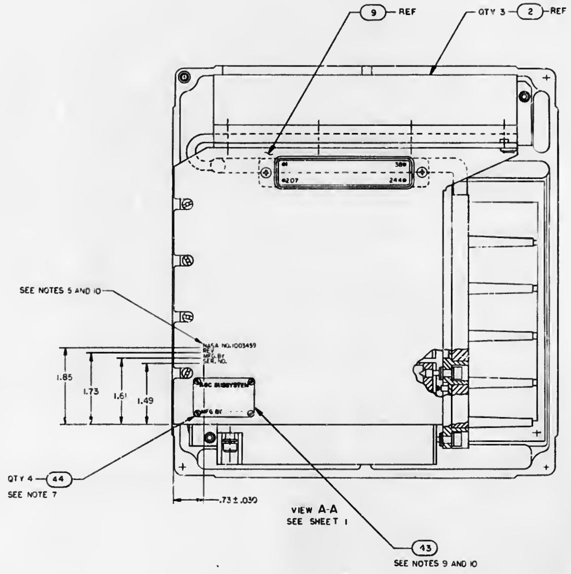
REV	DESCRIPTION	DATE	APPROVAL
	07691		
A	REVISED PER TDRR 07626 DR A.C. Bennett CHK M.R.B	5/4/64	
B	REVISED PER TDRR 11244 DR C.W. Bennett CHK R.W.E.	9/11/64	
C	REVISED PER TDRR 11495 DR J.P. Leonard CHK	9/7/64	



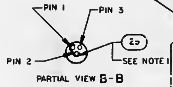
SECTION E-E



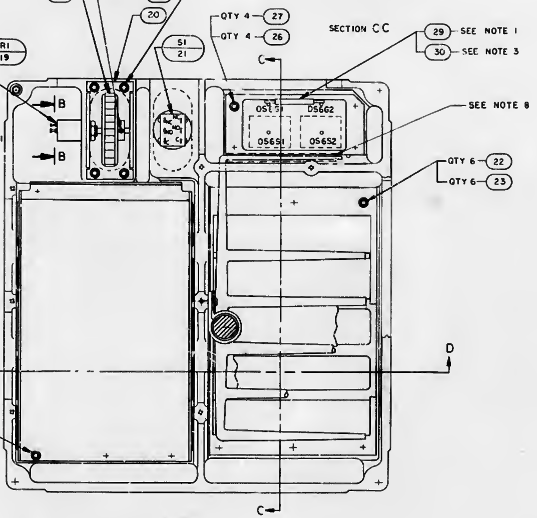
SECTION C-C



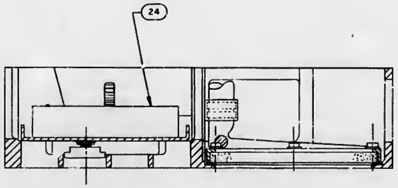
VIEW A-A
SEE SHEET 1



PARTIAL VIEW B-B



SECTION A-A
SEE SHEET 1

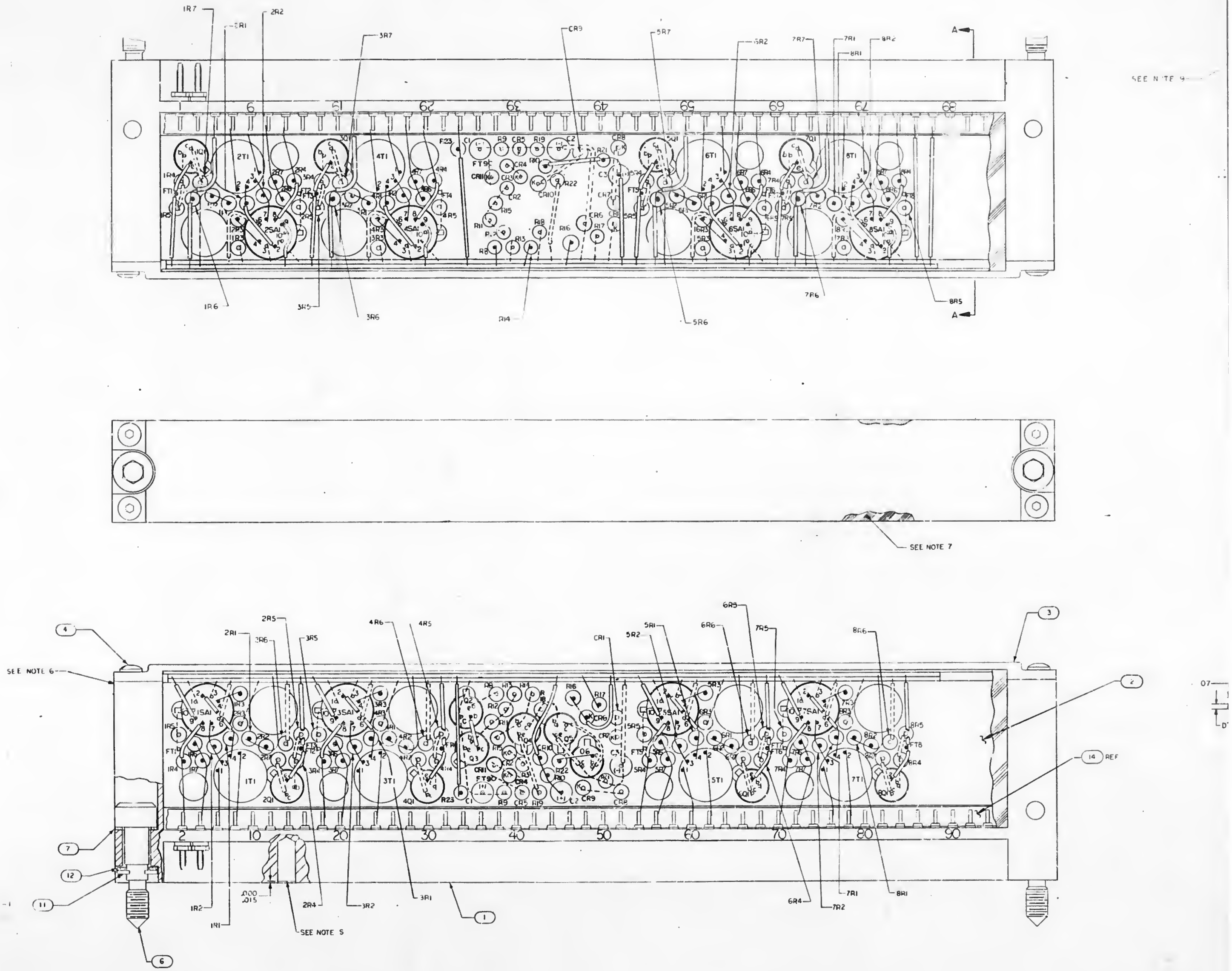


SECTION D-D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1.5'	MIL-T-713	CORD, LACING	45
4	MS16200-1	SCREW, PAN HEAD	44
1	1004628	PLATE, IDENT	43
1	MS16995-18	SCREW, SOCKET HEAD	42
2	MS35337-78	WASHER, LOCK	41
2	MS35200-17	SCREW, FLAT HEAD	40
2	MS35649 44	NUT, PLAIN	39
9	NAS620-4	WASHER, FLAT	38
1	MS35649-64	NUT, PLAIN	37
1	MS35338-79	WASHER, LOCK	36
~~[illegible]~~	~~[illegible]~~	~~SCREW, CAP, SOCKET HEAD~~	~~35~~
1	MS25281-4	CLAMP, CABLE	34
~~2~~	~~MS25281-6~~	~~CLAMP, CABLE~~	~~33~~
2	MS51053-213	SCREW, SET	32
1	MS15795-307	WASHER, FLAT	31
AR	SEE NOTE 3	SLEEVING	30
AR	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	29
1	1004589	INSULATOR, FRONT	28
13	MS16995-10	SCREW, CAP, SOCKET HEAD	27
9	MS15795-304	WASHER, FLAT	26
1	MS35216-38	SCREW, PAN HEAD	25
1	1003539	KEYBOARD MODULE, 018	24
20	MS15795-303	WASHER, FLAT	23
23	MS16995-9	SCREW, CAP, SOCKET HEAD	22
1	1006820	SWITCH, TOGGLE	21
1	1004116	BRACKET, POT	20
1	1006736	RESISTOR, VARIABLE	19
1	MS25281-9	CLAMP, CABLE	18
1	1003546	WIRING HARNESS	17
1	1006814	INDICATOR, DIGITAL DISPLAY	16
1	1003543	GASKET & FRAME ASSY	15
1	1004114	THUMB WHEEL	14
1	1007532	POWER SUPPLY ASSY	13
9	MS15795-305	WASHER, FLAT	12
3	MS16995-17	SCREW, SOCKET HEAD	11
4	MS16995-16	SCREW, SOCKET HEAD	10
1	1004569	HOUSING, RELAY MODULE	9
4	1003098	RELAY MODULE ASSY	8
1	1004151	HOUSING, FRONT PANEL	7
~~2~~	~~1004477-25~~	~~SCREW, FLAT HEAD~~	~~6~~
~~2~~	~~1004276~~	~~SPACER, SPECIAL~~	~~5~~
4	MS15795-308	WASHER, FLAT	4
4	1004545	SCREW, CAPTIVE	3
3	1003530	COMPONENT ASSY	2
1	1004588	INSULATOR, INDICATOR DISPLAY	1

LIST OF MATERIALS

1003400		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINAL FINISH	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DRAWN DATE 15 Apr 64 CHECKED E. Edward 16 Apr 64 APPROVAL APPROVAL Eldon C Hall 21 Apr 64 NASA APPROVAL MIT APPROVAL MIT APPROVAL	MANNED SPACECRAFT CENTER HOUSTON, TEXAS AGC KEYBOARD & DISPLAY MAIN PANEL CODE IDENT NO. ——— SIZE J NASA DRAWING NO. 1003459 SCALE 1/1 WT SHEET 2 OF 2
NEXT ASSY	USED ON			
APPLICATION				



NOTES:

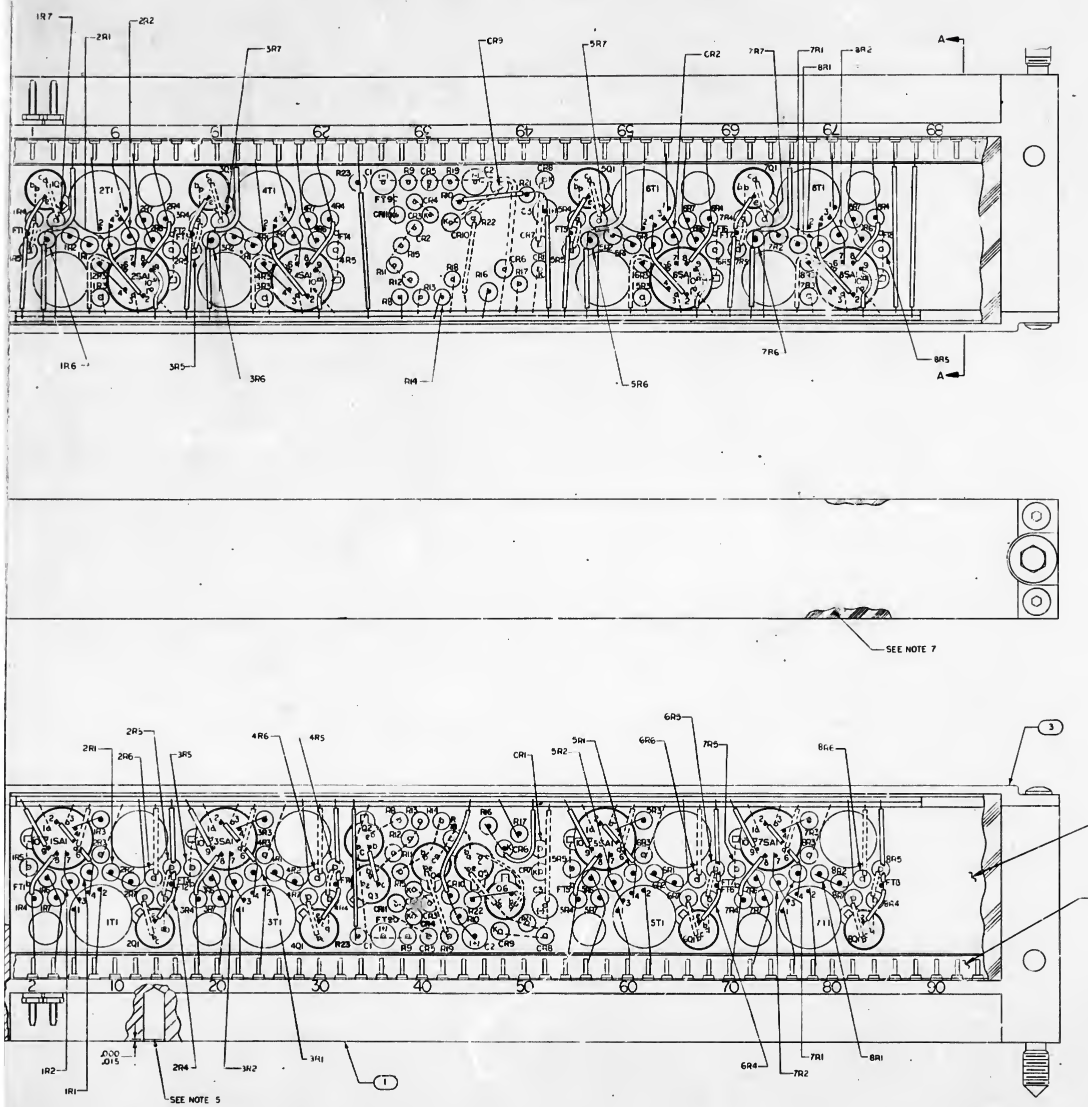
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .08/.10 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II. CLASS 2, USING MARKING INK 1006271-1, SERIALIZE PER ND1002023
4. MARK .24/.26 HIGH WHT PER ND1002019 AND ND1002122 TYPE II CLASS 2 USING MARKING INK 1006271-1
5. FILL KEYING HOLES MARKED A, C, D, T, U, Y, USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183, DO NOT EVACUATE AFTER FILLING
6. APPLY FIND NO. 10 TO INTERFACE PRIOR TO ASSEMBLY
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) INDICATED AREA ONLY
8. BOND FIND NO.2 TO FIND NO.1 USING FIND NO.15
9. SEAL INSULATORS & TERMINALS AS SHOWN PER ND1002004, TYPE VI
10. AR DENOTES AS REQUIRED
11. WORKMANSHIP FABRICATION AND INSPECTION REQUIREMENTS PER ND1002069 EXCEPT TWIST WIRES TO MALCO TERMINALS WHERE REQUIRED

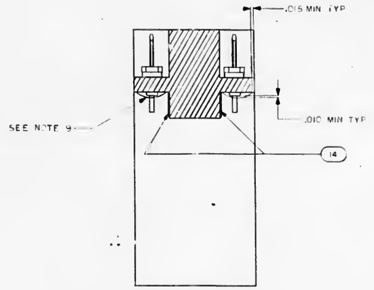
1003463 B

1003463 B F1X2

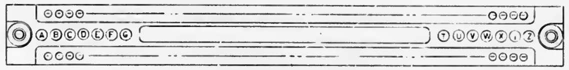
1003463 B

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13125. DR CHK	12/6/64	
B	REVISED PER TDRR 17243 DR ABLOWNE CK	4/21/65	

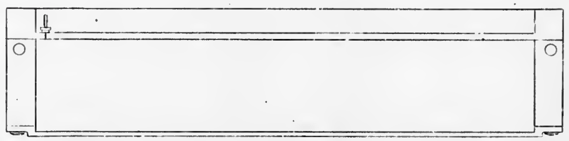


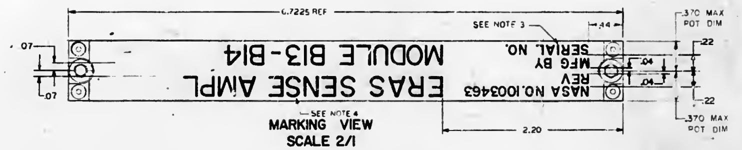


PARTIAL SECTION A-A



VIEW FOR KEY LOCATION
SEE NOTE 5





MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006806-6	TAPE ELECTRICAL	15
AR	1006825-12	INSULATION TAPE, ELECTRICAL	14
	1006187	SCHEMATIC	13
2	1004546-3	WASHER FLAT	12
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	11
AR	1006879	SILICONE COMPOUND THERMOCONDUCTIVE	10
~~6~~	~~1004117~~	~~PLUG, KEYING~~	~~9~~
~~2~~	~~1008145~~	~~PIN, SPRING~~	~~8~~
2	1004546-1	WASHER, FLAT	7
2	1004579-1	SCREW, JACKING	6
~~2~~	~~[illegible]~~	~~DRIVE CYLINDER~~	~~5~~
4	1000093-2	SCREW, BUTTON HEAD	4
1	1003108	COVER	3
1	1003464	ERASABLE SENSE AMPL. MODULE SUBASSY	2
1	1003148	HEADER HOUSING ASSY	1

LIST OF MATERIALS

1003465	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

M I T
INSTRUMENTATION LAB
Cambridge Mass

DRAWN R.D.P. DATE 2 JUN 64
CHECKED N.K. 3 JUN 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

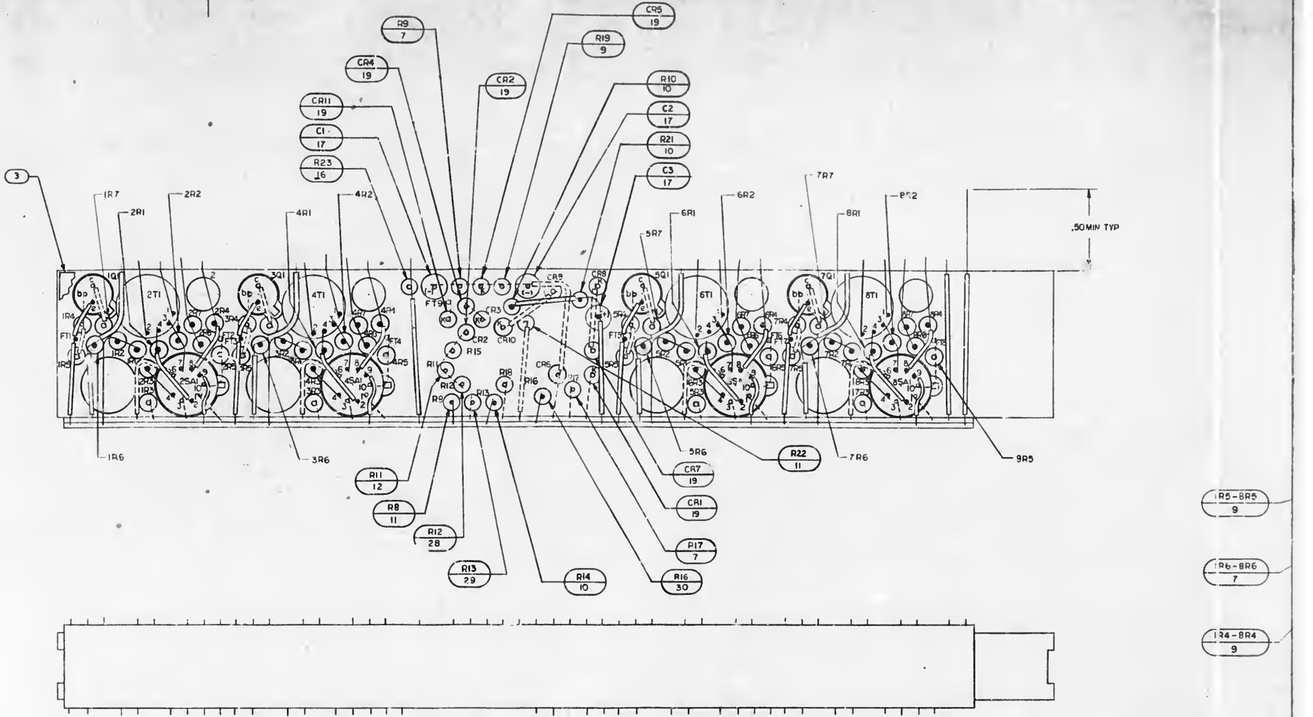
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

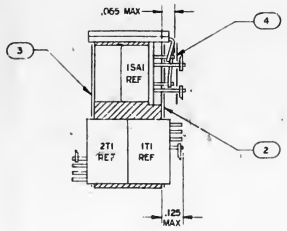
ERASABLE SENSE AMPL
MODULE
B13-B14 ASSEMBLY

CODE IDENT NO 80230 SIZE J NASA DRAWING NO. 1003463
SCALE 4/1 WT SHEET 1 OF 1

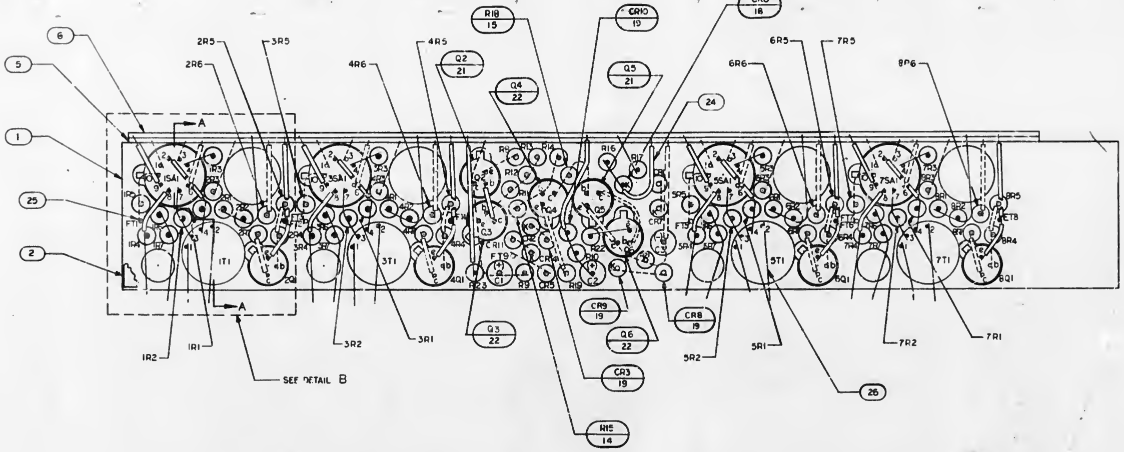
1003463 B

[redacted]





SECTION A-A

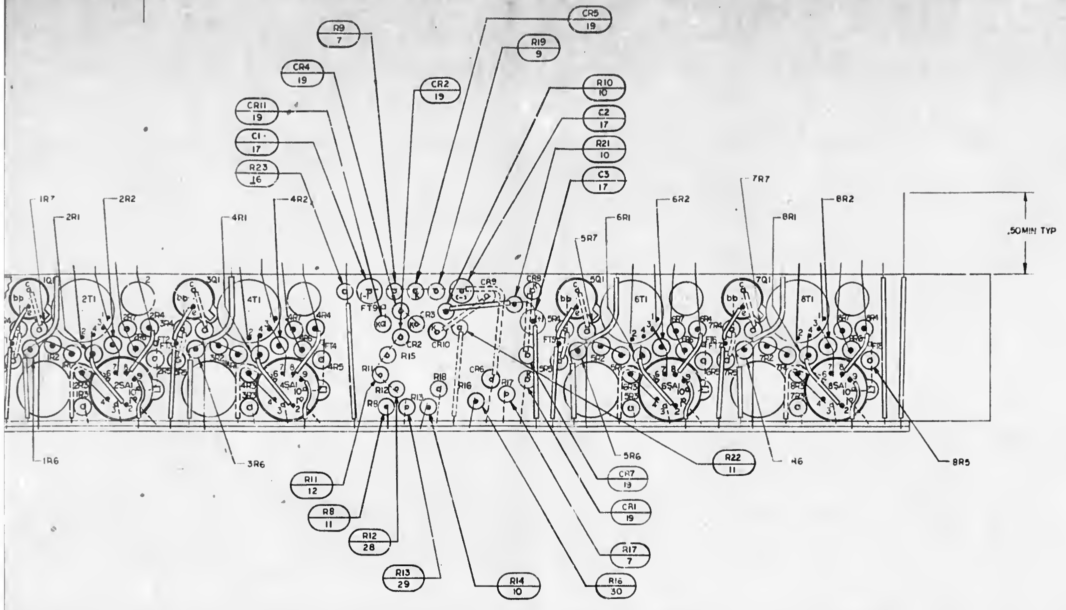


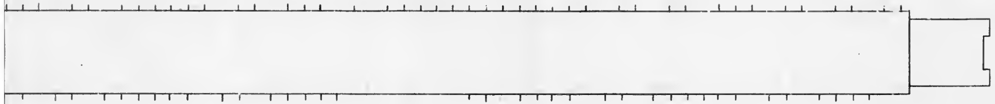
NOTES.

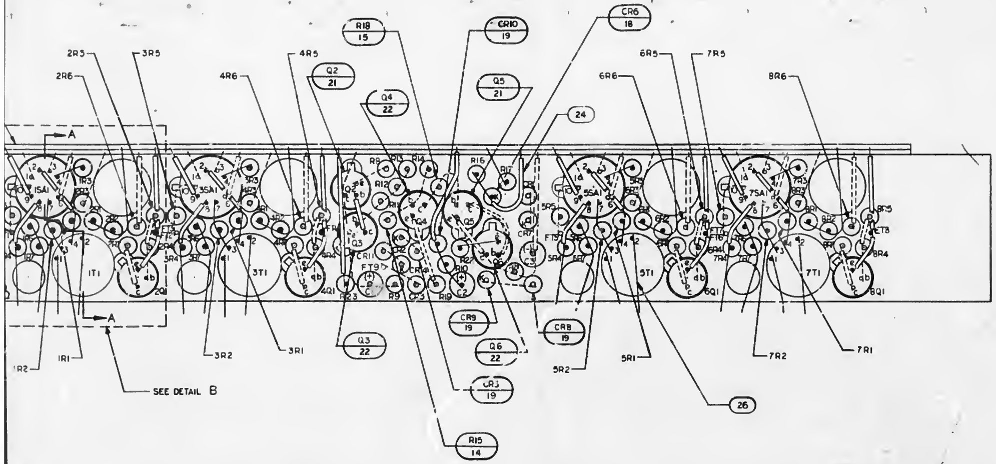
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
4. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. DASHED LINES INDICATES FIRST LEVEL WIRING AND SOLID LINE INDICATES SECOND LEVEL WIRING
6. STAKE ALL COMPONENTS PER ND 1002009
7. K INDICATES CATHODE SIDE OF DIODE
8. A/R DENOTES AS REQUIRED
9. FT DENOTES FEEDTHRU
10. VALUE TO BE DETERMINED BY ELECTRICAL TEST
R3, R11, R16 & R18 TO BE SELECTED FROM CHART A

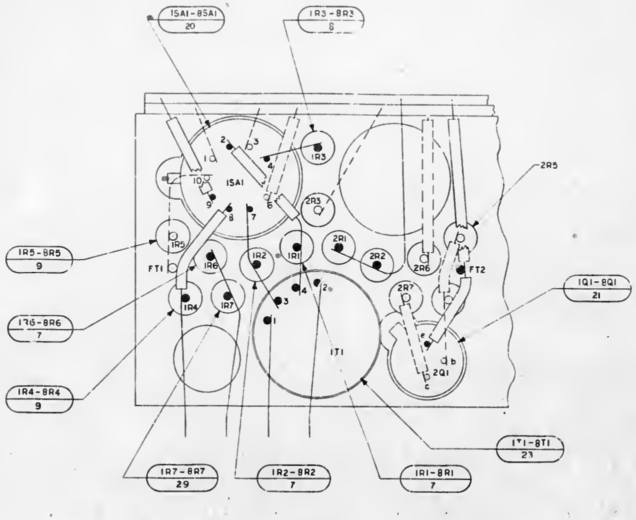
R3	R11
PART NO.	PART NO.
1006750-15	1006750-15
-16	-16
-17	-17
-18	-18
-19	-19
-20	-20
-21	-21
-22	-22
-23	-23
-24	-24
-25	-25
-26	-26
-27	-27
-28	-28
-29	-29
-30	1006750-30
-31	
-32	
-33	
-34	
-35	
-36	
-37	
-38	
-39	
-40	
-42	
-43	
-44	
-45	
-46	
-47	
-48	
1006750-49	

SYM	REVISIONS DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 11873 DR [illegible] CHK R.R.B. RTM	[illegible]	[illegible]
B	REVISED PER TDRR 13436 DR R. [illegible] CHK [illegible] RTM	[illegible]	[illegible]









DETAIL B
SCALE: 8/1

CHART A

R3	R11	R11	R15	R18
PART NO.	PART NO.	PART NO.	PART NO.	PART NO.
1006750-15	1006750-15	1006750-31	1006750-1	1006750-25
-16	-16	-32	-2	-26
-17	-17	-33	-3	-27
-18	-18	-34	-4	-28
-19	-19	-35	-5	-29
-20	-20	-36	-6	-30
-21	-21	-37	-7	-31
-22	-22	-38	-8	-32
-23	-23	-39	-9	-33
-24	-24	-40	-10	-34
-25	-25	-41	-11	-35
-26	-26	-42	-12	-36
-27	-27	-43	-13	-37
-28	-28	-44	-14	-38
-29	-29	-45	-15	-39
-30	1006750-30	1006750-46	-16	-40
-31			-17	-41
-32			-18	-42
-33			-19	-43
-34			-20	-44
-35			-21	-45
-36			-22	-46
-37			-23	-47
-38			-24	-48
-39			1006750-25	1006750-49
-40				
-42				
-43				
-44				
-45				
-46				
-47				
-48				
1006750-49				

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
╳	1006187	SCHEMATIC	REF
1	1006750-35	RESISTOR	30
9	1006750-43	RESISTOR	29
1	1006750-56	RESISTOR	28
			27
A/R	1006757-1	WIRE, ELECTRICAL .010 X .020	26
A/R	1006757-8	WIRE, ELECTRICAL	25
A/R	1006776-22	INSULATION SLEEVING	24
8	1006762-2	TRANSFORMER	23
3	1006752	TRANSISTOR	22
10	1006753	TRANSISTOR	21
8	1006769	SENSE AMPLIFIER	20
10	1006751	DIODE	19
1	1006838	DIODE	18
3	1006755-69	CAPACITOR	17
1	1006750-49	RESISTOR	16
1	SEE NOTE 10	RESISTOR	15
1	1006750-24	RESISTOR	14
			13
1	SEE NOTE 10	RESISTOR	12
2	1006750-15	RESISTOR	11
3	1006750-39	RESISTOR	10
17	1006750-32	RESISTOR	9
8	SEE NOTE 10	RESISTOR	8
26	1006750-24	RESISTOR	7
1	1003144-1	MATRIX ASSY	6
1	1003144-2	MATRIX ASSY	5
8	1004242	INSULATOR	4
1	1004239-2	INSULATOR	3
1	1004239-1	INSULATOR	2
1	1004222	HOLDER, COMPONENT	1

LIST OF MATERIALS

1003463	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

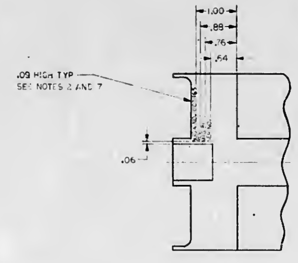
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. [illegible] DATE [illegible]
CHECKED R.R. [illegible] 2 JUN 64
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

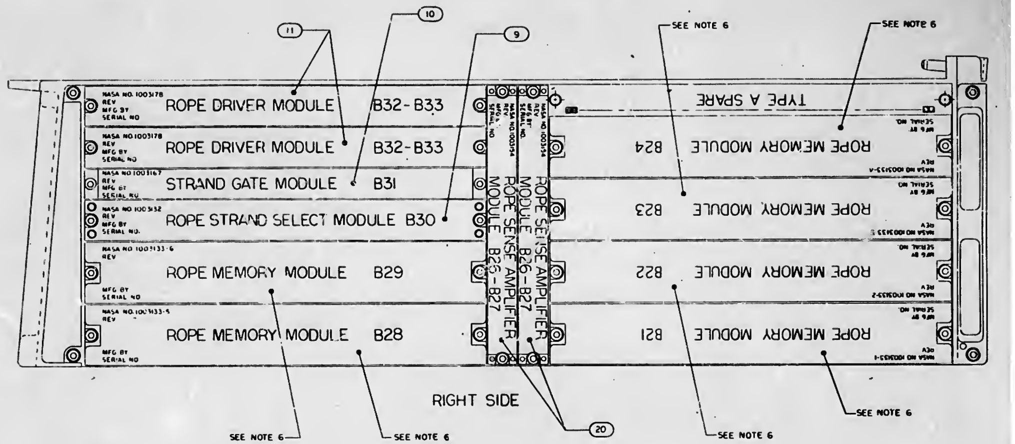
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ERASABLE SENSE AMP
B13-B14 MODULE
SUB ASSEMBLY

CODE IDENT NO. — SIZE J NASA DRAWING NO. 1003464
SCALE 4/1 WT SHEET 1 OF 1

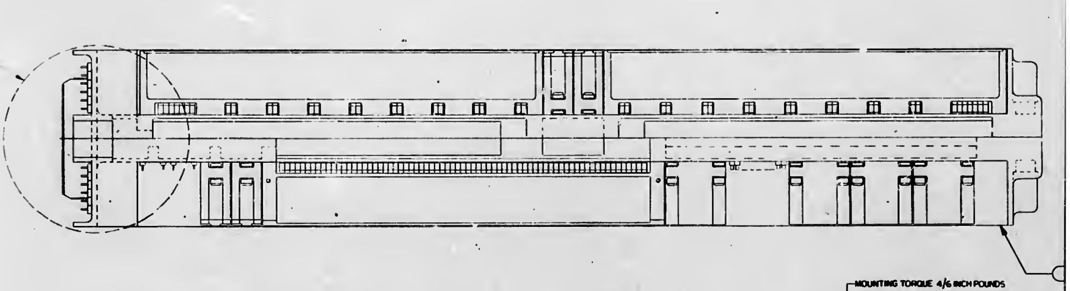


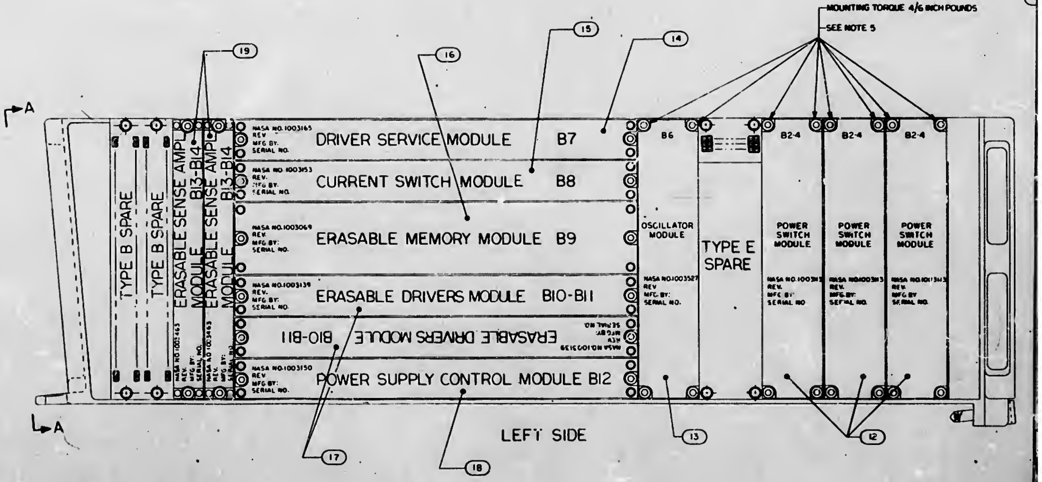
MARKING VIEW



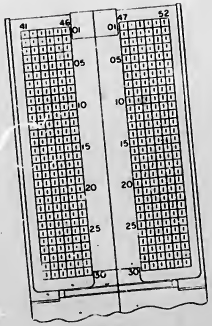
RIGHT SIDE

SEE MARKING VIEW





LEFT SIDE



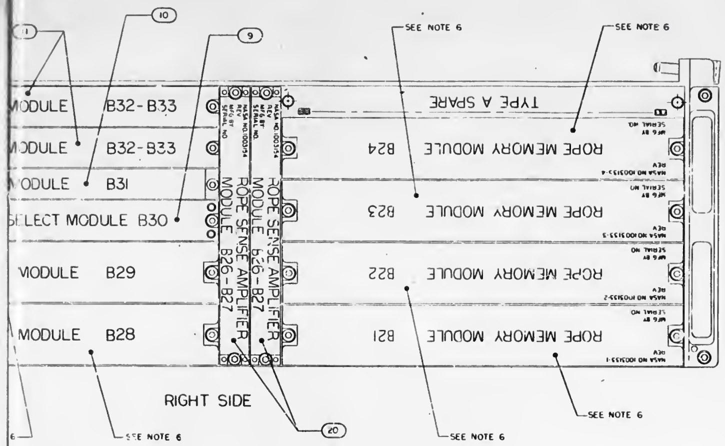
VIEW A-A

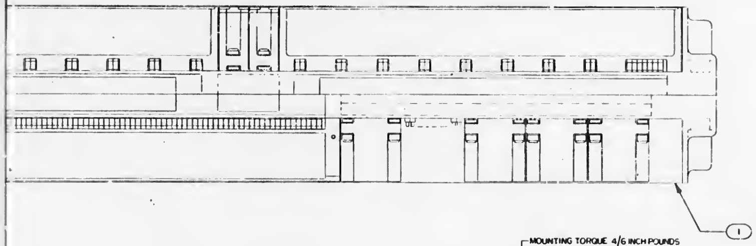
NOTES:

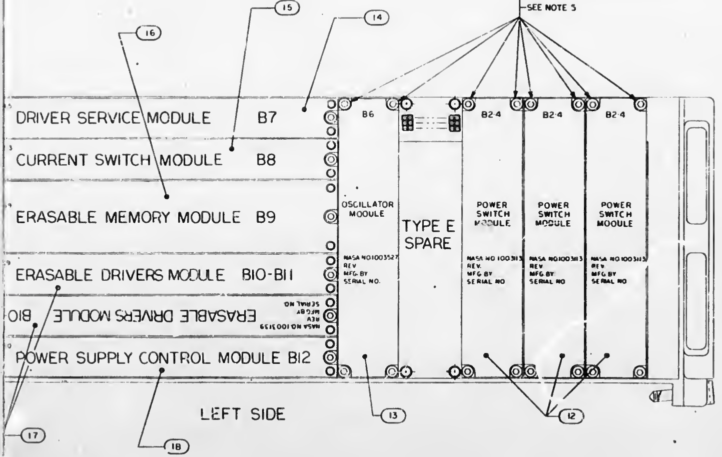
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARKING AND LETTERING WHITE PER ND1002019 AND 1002122, TYPE II, CLASS I
3. ~~COAT ALL MATING SURFACES WITH 1006879~~
4. ~~AR DENOTES AS REQUIRED~~
5. UNLESS OTHERWISE SPECIFIED TORQUE ALL MODULE MOUNTING & TRAY HALF RETAINING SCREWS 15/19 INCH POUNDS
6. ROPE MODULES ARE SHOWN FOR REFERENCE ONLY
7. SERIALIZE PER ND1002023

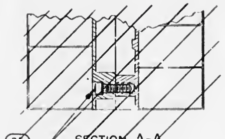
SYM	DESCRIPTION	DATE	APPROVAL
A	INACTIVE PER TDRR 10311 DR CHK R.A.E.		
B	CHANGED PER TDRR 12597 DR J.P. Leonard CHK		

REVISIONS TDRR 10580

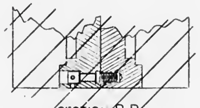




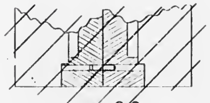




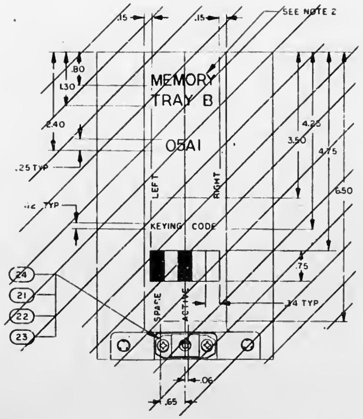
SECTION A-A
2 PLACES



SECTION B-B
4 PLACES



SECTION C-C
6 PLACES



Ⓐ INACTIVE AFTER SYSTEM NO. 20 .
FOR NEW PROCUREMENT USE 1003476 .

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
~~4~~	~~1004546-3~~	~~WASHER, FLAT~~	~~26~~
~~2~~	~~1004250~~	~~SCREW~~	~~25~~
~~1~~	~~1004262~~	~~PLATE, BACKING~~	~~24~~
~~2~~	~~NAS1402-2~~	~~SCREW, MACHINE, PAN HD~~	~~23~~
~~1~~	~~1004261~~	~~SCREW, JACK~~	~~22~~
~~1~~	~~1004254~~	~~RETAINER, JACKSCREW~~	~~21~~
2	1003154	ROPE SENSE AMPLIFIER MODULE	20
2	1003463	ERASABLE SENSE AMPL MODULE	19
1	1003150	POWER SUPPLY CONTROL MODULE	18
2	1003139	ERASABLE DRIVER MODULE	17
1	1003069	ERASABLE MEMORY MODULE	16
1	1003163	CURRENT SWITCH MODULE	15
1	1003165	DRIVER SERVICE MODULE	14
1	1003527	OSCILLATOR MODULE	13
3	1003113	POWER SWITCH MODULE	12
2	1003178	ROPE DRIVER MODULE	11
1	1003167	STRAND GATE MODULE	10
1	1003132	ROPE STRAND SELECT MODULE	9
~~1~~	~~1003133-1~~	~~ROPE MEMORY MODULE~~	~~8~~
~~1~~	~~1003133-6~~	~~ROPE MEMORY MODULE~~	~~7~~
~~1~~	~~1003133-5~~	~~ROPE MEMORY MODULE~~	~~6~~
~~1~~	~~1003133-4~~	~~ROPE MEMORY MODULE~~	~~5~~
~~1~~	~~1003133-3~~	~~ROPE MEMORY MODULE~~	~~4~~
~~1~~	~~1003133-2~~	~~ROPE MEMORY MODULE~~	~~3~~
~~1~~	~~1003177~~	~~TRAY B WIRED ASSEMBLY RIGHT HAND~~	~~2~~
1	1003468	TRAY B WIRED ASSEMBLY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003469	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS .XX ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE
CHECKED R.R. Bogan 3 JUN 64
APPROVAL 17 JUN 64
APPROVAL
NASA APPROVAL
MIT APPROVAL

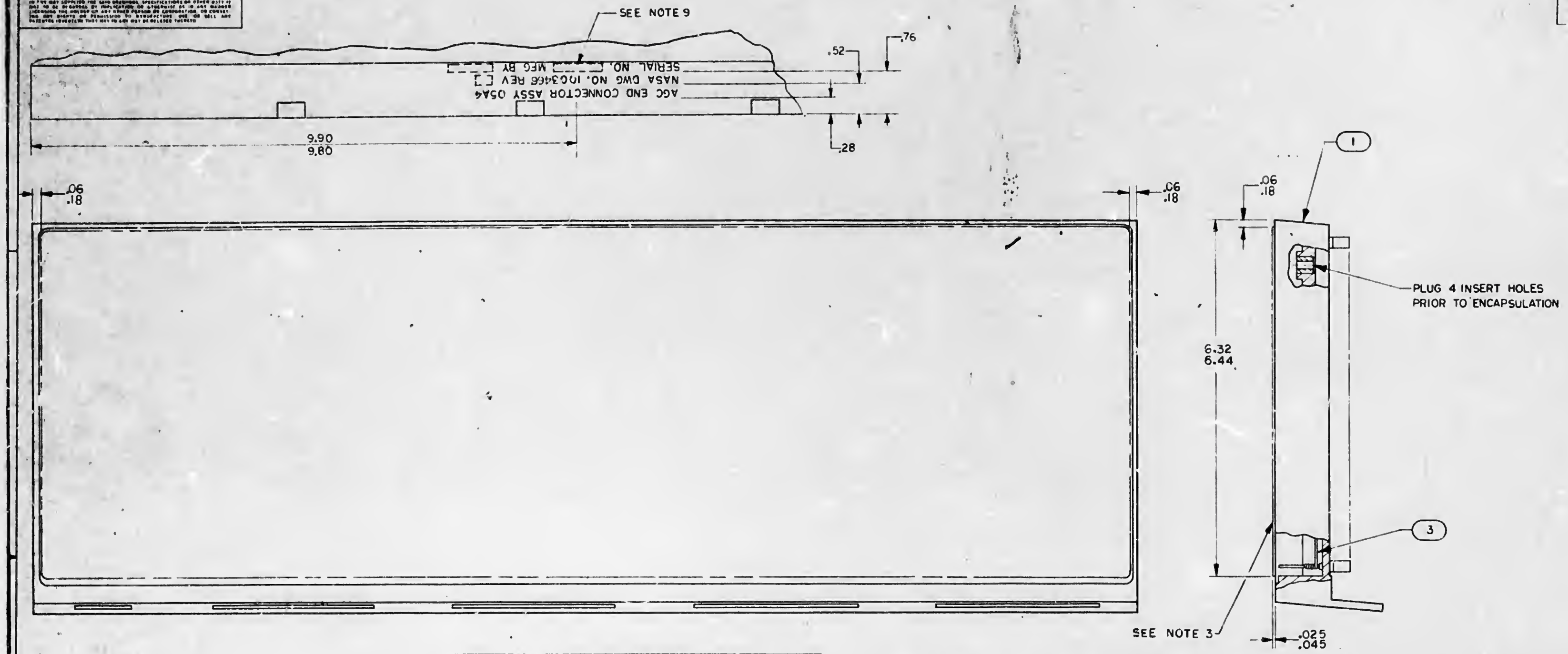
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MEMORY TRAY B ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003465
SCALE 1/1
WT
SHEET 1 OF 1

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 18875 DR Bishop CHK RTM	8/13/64	

REVISIONS 19889


SEE NOTE 9
SERIAL NO. [ ] MFG BY [ ]
NASA DWG NO. 1003466 REV [ ]
AGC END CONNECTOR ASSY 05A6
.52
.76
.28
9.90
9.80
.06
.18
.06
.18
.06
.18
1
PLUG 4 INSERT HOLES PRIOR TO ENCAPSULATION
6.32
6.44
3
SEE NOTE 3
.025
.045

POWER AND GROUND CONFIGURATION						
SIGNAL	FROM	TO	FROM	TO	FROM	TO
+3MX	B/4605	B/4705				
+3MY	B/4606	B/4706				
+3MZ	B/4607	B/4707				
+3A	A/4804	B/4804				
	B/4604	B/4704				
	A/4504	B/4904				
+3B	A/4801	B/4801	A/4501	B/4901		
	A/4802	B/4802	A/4502	B/4902		
	A/4803	B/4803	A/4503	B/4903		
+28 COM	B/4608	B/4609	B/4708	B/4709		
	B/4609	B/4708	B/4608	J-4206		
MEMORY INTERFACE GROUNDS	B/4602	A/4701	A/4601	B/5005	B/5213	B/5215
	B/4601	A/4702	A/4602	B/5006	B/5212	B/5214
	B/4603	A/4602	B/5212	A/4703	B/5214	B/5216
	A/4601	B/5206	A/4701	B/5211		
	A/4703	B/5106	B/5211	B/5213		
OVDC	B/4501 ⑦	B/5203	A/4701	B/5104		
	B/5202	B/5204	B/4701	B/5101		
	A/4603	B/5204	B/5101	B/5104		
	A/4603	B/4703	B/4703	B/5103		
	A/4603	B/5202	B/4702	B/5102		
	A/4702	B/5105	B/5102	B/5105		
	A/4601	B/4701	A/4602	B/4702		
28VA	B/5001 ⑥	J-4201	B/5002 ⑧	J-4301	B/5001	B/5002
28VB	B/5003 ⑥	J-4901	B/5004 ⑧	J-5001	B/5003	B/5004
28V RETURN	B/5201 ⑥	J-4401	B/5205 ⑧	J-4501	B/5201	B/5205
	J-4501	J-4701	J-4401	J-4701	J-4501	J-4801
	J-4401	J-4801				
B PLUS A	B/4610	B/4805	B/4905	A/4604		
B PLUS B	A/4704	B/4806				

SIGNAL	FROM	TO	FROM	TO	FROM	TO
SHIELD GROUNDS	J-4609	J-4615	J-4125	J-4128	J-4615	J-4619
	J-4128	A/4703	J-4619	J-4125		
TWISTED PAIR RETURN AND DSKY GROUNDS	J-4611	J-4203	J-4618	J-4620	J-4203	J-4202
	J-4620	A/4702	J-4202	J-4618		
13 DSKY	B/4808	J-4205				
V FAIL	B/4213	B/4813				
3 DSKY	B/4906	J-4204				

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIREWRAP PER ND1002031 USING 1006188
3. ENCAPSULATE PER ND 1002217
~~4. BOND FIND 2 TO FIND 1 PER ND1002004~~
5. AR DENOTES AS REQUIRED
6. RUNS DENOTED BY ⑥ IN CHART TO BE TWISTED APPROXIMATELY ONE-HALF TURN PER INCH, 3 WIRES, 1 PLACE
7. RUN DENOTED BY ⑦ IN CHART TO BE MADE USING 2 WIRES (FIND NO. 3) FROM B/4501 AND B/5203
8. RUNS DENOTED BY ⑧ IN CHART TO BE TWISTED APPROXIMATELY ONE-HALF TURN PER INCH, 3 WIRES, 1 PLACE
9. MARK .170/.150 HIGH WHITE PER ND1002019 AND SERIALIZE PER ND1002023

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006945-1	WIRE, ELEC NO. 24 AWG	3
~~1~~	~~1004273~~	~~PIN IDENT BOARD, COMPUTER END~~	~~2~~
1	1003181	SUB-ASSEMBLY, CONN, COMPUTER END	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003469	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS — DECIMALS ±.03 ANGLES —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT

DRAWN R. W. DuPont DATE 2 JUN 64
CHECKED A. R. Bogan 3 JUN 64
APPROVAL R. T. M. 12 JUN 64
APPROVAL E. J. Duggan 7 July 64
NASA APPROVAL
MIT APPROVAL 8 July 64

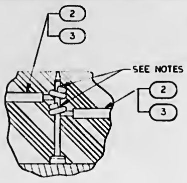
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONNECTOR, COMPUTER END
ASSEMBLY

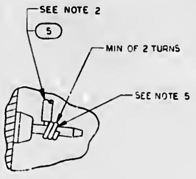
CODE IDENT NO —
SIZE D
NASA DRAWING NO 1003466
SCALE 1/1
WT
SHEET 1 OF 1

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 11871 DR P. Baumann CHK GF.Z. JM	8/13/64	HC

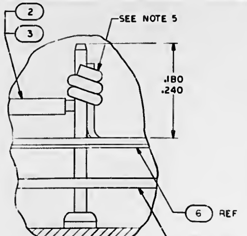
10889



DETAIL C
SCALE 5/1

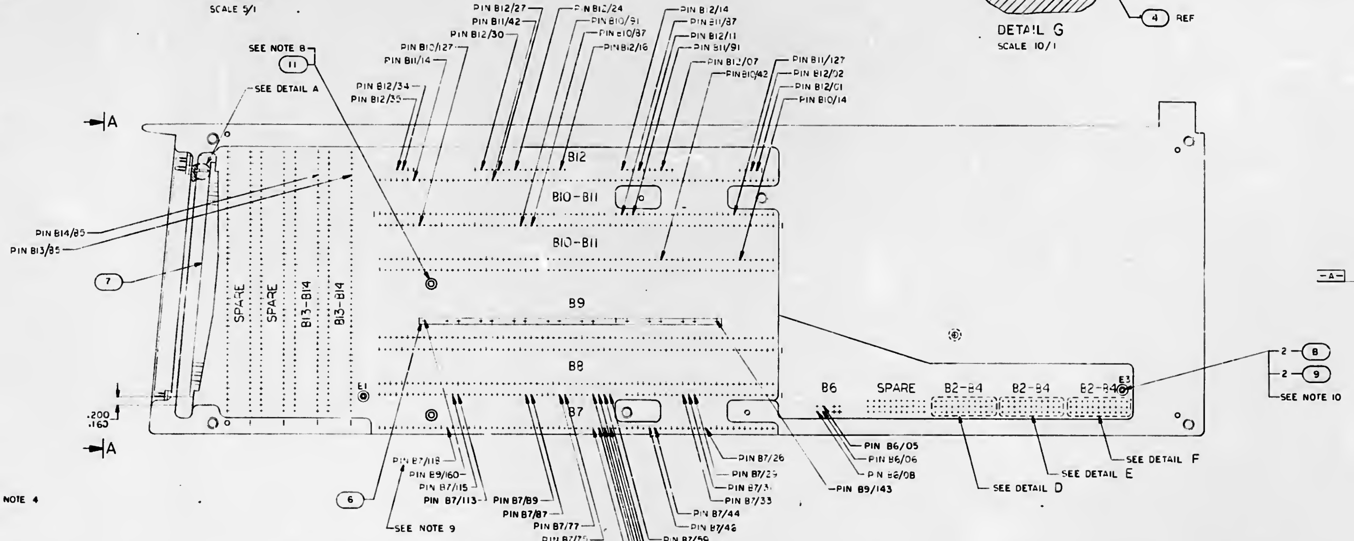


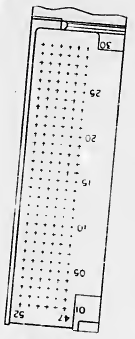
DETAIL A
SCALE 5/1



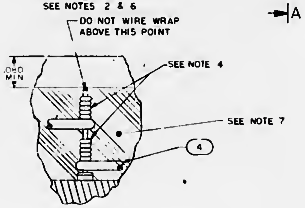
DETAIL G
SCALE 10/1

VIEW SHOWN WITH POTTING REMOVED FOR CLARITY

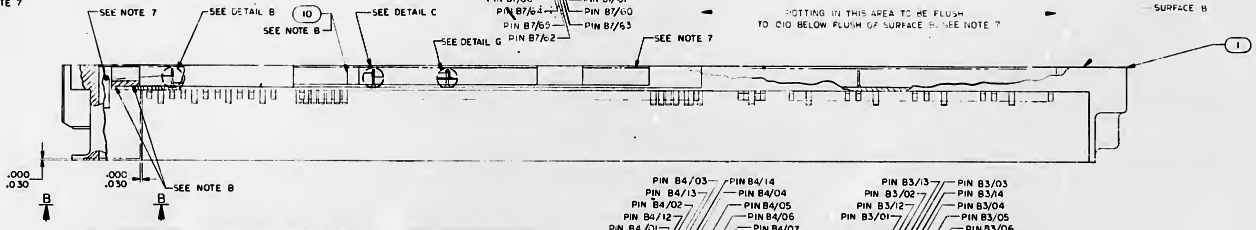


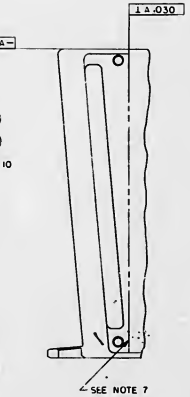


VIEW A A
SEE NOTES 2 & 6



DETAIL B
SCALE 5/1
VIEW OF TYPICAL WIREWRAPPING



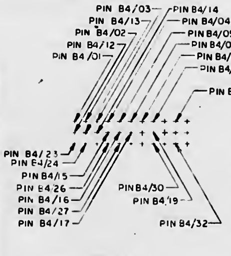


VIEW B-B

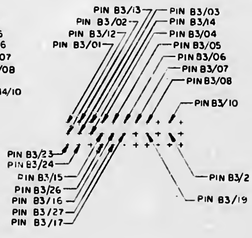
WIRING CHART									
FROM	TO	FROM	TO	FROM	TO	FROM	TO	WIRE	INSULATION
5001 (12)	B4/08	B12/27	B3/27	5102 (13)	B4/05	B2/12	B7/33	FIND NO. 3	FIND NO 2
5003 (12)	B3/08	B2/16	B12/09	4803 (13)	B4/03	4806	B2/23		
5201 (12)	B4/17	B12/09	B12/35	5102 (13)	B4/06	4806	B2/24		
5002 (12)	B4/30	B12/35	B3/16	4901 (13)	B4/012	4906	B3/14		
5004 (12)	B3/30	B4/27	B12/16	5202 (13)	B4/015	B7/77	B9/153		
5205 (12)	B3/06	B7/75	B9/152	4904 (16)	B12/30	B7/77	B9/157		
B4/08	B4/19	B7/75	B9/156	B12/30	B12/14	4903	B4/14		
B4/19	B4/30	B10/14	B9/143	B12/14	B4/24	5105	B4/27		
B3/08	B3/19	B10/87	B9/155	4902 (13)	B4/13	B13/5	5214		
B3/19	B3/30	B10/127	B9/159	5104 (13)	B4/16	B13/21	5214		
4805 (14)	B7/65	B11/14	B9/160	B2/10	B3/10	B13/59	5216		
B7/65 (14)	B7/63	B11/87	B9/149	B3/10	B4/10	B13/75	5216		
B7/63 (14)	B2/01	B11/127	B9/144	B4/10	B12/02	B14/5	5213		
4701 (14)	B2/04	5005	B10/42	B12/02	B12/24	B14/21	5213		
4905 (14)	B7/66	5005	B11/91	B12/24	B12/34	B14/59	5215		
B7/66 (14)	B7/64	5006	B7/113	B12/34	B2/21	B14/75	5215		
B7/64 (14)	B7/12	5006	B10/91	B2/21	B3/21				
5103 (14)	B2/15	5106	B7/44	B3/21	B4/21				
5202	B9/154	5106	B7/118	B4/21	B2/32				
5203	B9/149	5206	B7/26	B2/32	B3/32				
5204	B9/148	5206	B11/42	B3/32	B4/32				
4702	B9/151	5211	B6/05	B4/32	B6/08				
4703	B9/150	5211	B14/85	B6/08	B7/115				
B2/02	B7/59	5212	B13/85	B7/115	4708				
B7/59	B7/61	4704 (15)	B7/89	4708	4709				
B4/01	B3/01	B7/89 (15)	B4/23	B2/17	B3/17				
B4/02	B3/02	4701 (15)	B4/26	B3/17	B4/17				
B4/03	B3/03	B3/24	B4/23	B2/07	B2/03				
B4/12	B3/12	B3/23	B7/29	B2/03	B3/07				
B4/13	B3/13	4804	B7/87	B3/07	B4/07				
B4/04	B3/04	B7/87	B3/24	B4/07	B6/06				
B4/05	B3/05	B4/26	B3/26	B2/13	B7/60				
B4/06	B3/06	B3/26	B2/26	B7/60	B7/62				
B4/15	B3/15	4801 (13)	B4/02	B2/01	B12/07				
B2/27	B12/01	5101 (13)	B4/04	B12/07	B12/11				
B12/01	B12/27	4802 (13)	B4/02	4808	B2/14	FIND NO. 3	FIND NO. 2		

NOTES

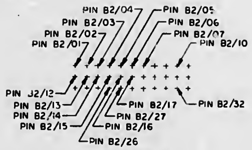
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIREWRAP USING 1006158 & FIND NO. 5 PER ND1002031
3. AR DENOTES AS REQUIRED
4. WIREWRAP USING 1006153 & FIND NO. 4 PER ND1002031
5. SOLDER PER MSFC-PROC-158 USING SOLDER PER QQ-S-571 Sn60
6. WIRE PER WIRING CHART
7. ENCAPSULATE PER ND 1002217. ALL WIRING TO BE RETAINED WITHIN ENCAPSULANT
8. BOND FIND NO. 7,10 & 11 TO FIND NO. 1 PER ND1002004
9. LETTER & NUMBER AT LEFT OF LINE INDICATES MODULE DESIGNATION & NUMBER AT RIGHT OF LINE INDICATES MODULE PIN NO.
10. PROVIDE 3/8 DIA OPENING FOR E1 & E3 WHEN ENCAPSULATING
11. DO NOT INSTALL FIND NO'S 6,8,9,10 & 11 UNTIL WIREWRAPPING IS COMPLETED
12. 3 WIRES TO BE TWISTED APPROXIMATELY 1/2 TURN PER INCH. DENOTED BY (12) ON CHART
13. 2 WIRES TO BE TWISTED APPROXIMATELY 1/2 TURN PER INCH DENOTED BY (13) ON CHART
14. FIRST RUN AND THIRD RUN OF GROUP DENOTED BY (14) IN CHART TO BE TWISTED WITH FORTH RUN AT APPROXIMATELY 1/2 TURN PER INCH
15. FIRST RUN AND SECOND RUN OF GROUP DENOTED BY (15) IN CHART TO BE TWISTED WITH THIRD RUN AT APPROXIMATELY 1/2 TURN PER INCH
16. ALL RUNS SHALL BE INSTALLED AS INDICATED PER (TO) (FROM) IN WIRING CHART



DETAIL D
SCALE 2/1



DETAIL E
SCALE 2/1



DETAIL F
SCALE 2/1

QTY RFQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1006158	WIRE WRAP DECK (HAND)	REF
☒	1006153	WIRE WRAP DECK (MACH)	REF
1	1004622-4	SPACER	11
1	1004622-3	SPACER	10
2	MS35333-69	WASHER, LOCK, INT TOOTH	9
2	1004615-2	TERM, THREADED	8
1	1004616	WIRE COMB	7
1	1003195	BUSS STRIP ASSY	6
AR	1006732-2	WIRE, ELEC, INS	5
AR	1006732-1	WIRE, ELEC, INS	4
AR	QQ-W 343 TYPE S	WIRE, 24GAGE, COATED, SOFT	3
AR	1006776-22	INSULATION, SLEEVING ELECTRICAL	2
1	1003146	TRAY B, SUB ASSEMBLY, LEFT HAND	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003468	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS 1/16 DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

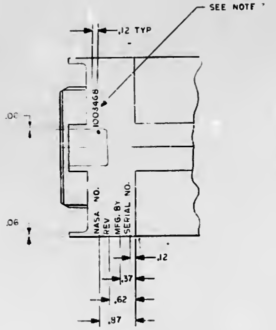
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL W Kupfer

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

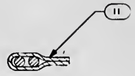
TRAY B
WIRED ASSEMBLY
LEFT HAND

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003467
SCALE 1/1
WT
SHEET 1 OF 1

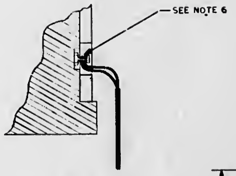
[illegible]



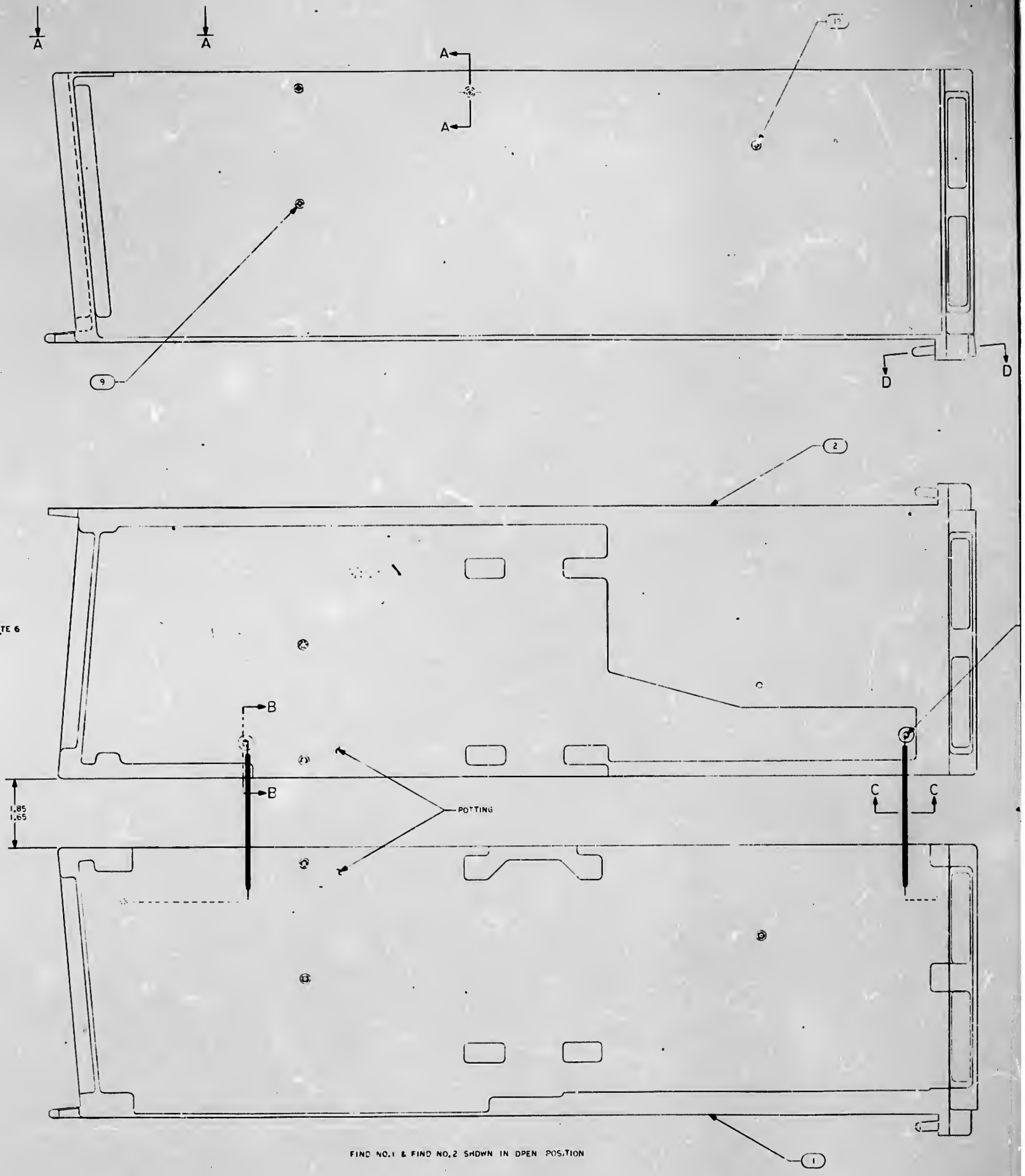
VIEW A-A



SECTION C-C
SCALE 8/1



SECTION B-B
SCALE 2/1



FIND NO.1 & FIND NO.2 SHOWN IN OPEN POSITION

NOTES

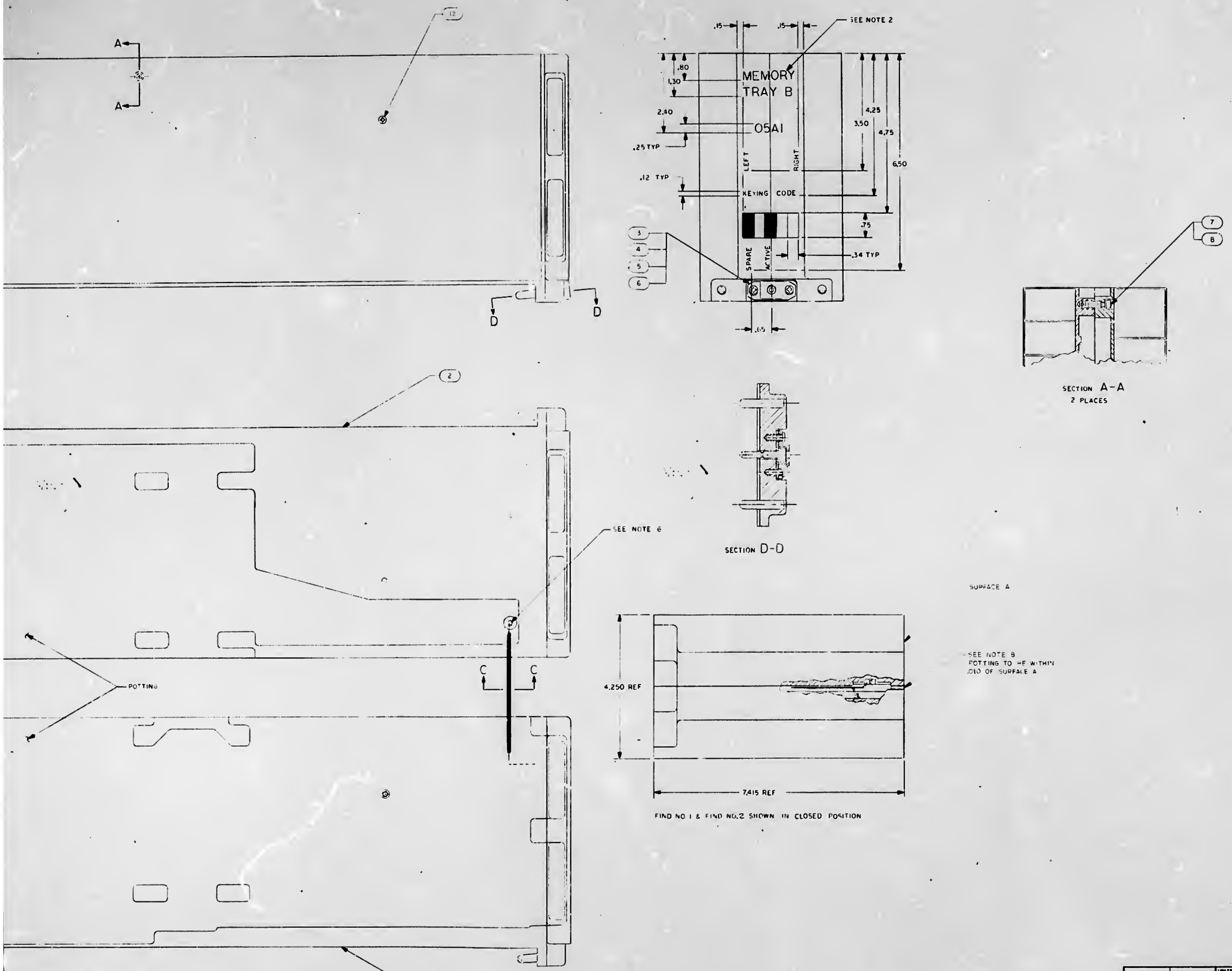
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MARKING AND LETTERING TO BE BLACK PER ND1002019 AND 1002122 TYPE II CLASS I
3. COAT ALL MATING SURFACES OF FIND NO.1 & FIND NO.2 WITH FIND NO. 10
4. AR DENOTES AS REQUIRED
5. UNLESS OTHERWISE SPECIFIED, TORQUE ALL TRAY HALF RETAINING SCREWS 15 TO 19 INCH POUNDS
6. SOLDER PER ND 1002071, USING SOLDER PER QQ-S-571, SN60
7. MARKING AND LETTERING TO BE WHITE PER ND 1002019 AND ND 1002122 TYPE II CLASS I, SERIALIZE PER ND 1002023
8. ENCAPSULATE PER ND 1002217

1003468 A

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 11871 DR CHK		

10385

1003468 A



SECTION A-A
2 PLACES

SECTION D-D

FIND NO 1 & FIND NO.2 SHOWN IN CLOSED POSITION

FIND NO.1 & FIND NO.2 SHOWN IN OPEN POSITION

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	MS24693-PC7	SCREW, MACHINE FLAT HD	12
AR	1006826-3	INSULATION TAPE, ELECTRICAL	11
AR	1006879	SILICONE COMPOUND	10
2	MS24693-PC9	SCREW, MACHINE FLAT HD	9
2	1004546-3	WASHER, FLAT	8
2	1004250	SCREW	7
1	1004262	PLATE, BACKING	6
2	NAS1402-2	SCREW, MACHINE PAN HD	5
1	1004261	SCREW, JACK	4
1	1004254	RETAINER, JACKSCREW	3
1	1003467	TRAY B WIRED ASSEMBLY, LEFT HAND	2
1	1003177	TRAY B WIRED ASSEMBLY, RIGHT HAND	1

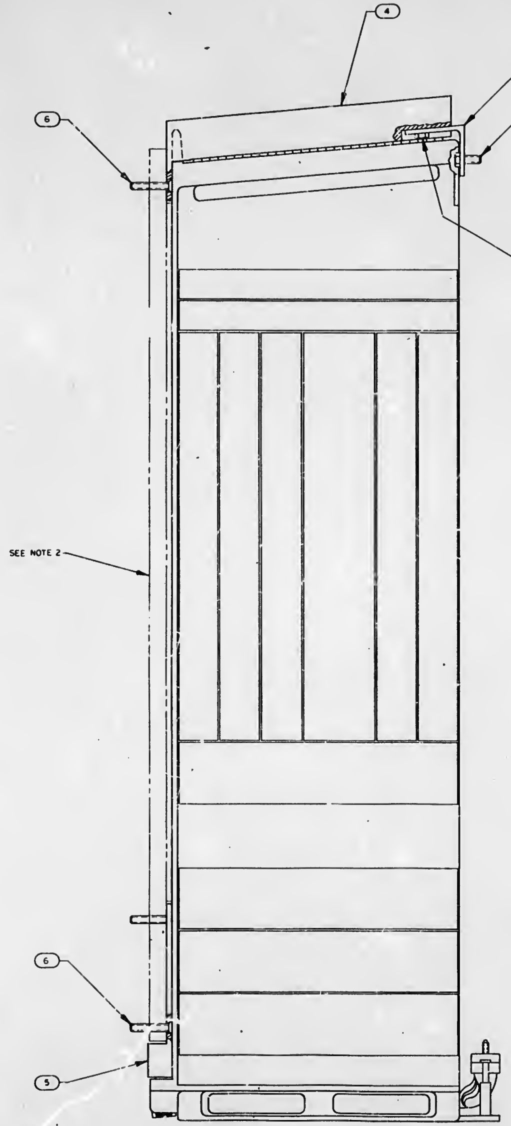
LIST OF MATERIALS

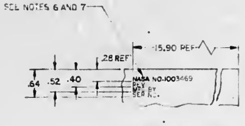
1003465		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINAL FINISH	MIT INSTRUMENTATION LAB CAMBRIDGE MASS DRAWN DATE CHECKED 11 NOV 64 APPROVAL 13 NOV 64 APPROVAL NASA APPROVAL MIT APPROVAL MIT APPROVAL	MANNED SPACECRAFT CENTER HOUSTON TEXAS TRAY B. SUBASSEMBLY CODE IDENT NO — SIZE J NASA DRAWING NO. 1003468 SCALE 1/1 WT SHEET 1 OF 1
NEXT ASSY	USED ON			
APPLICATION				

1003468 A

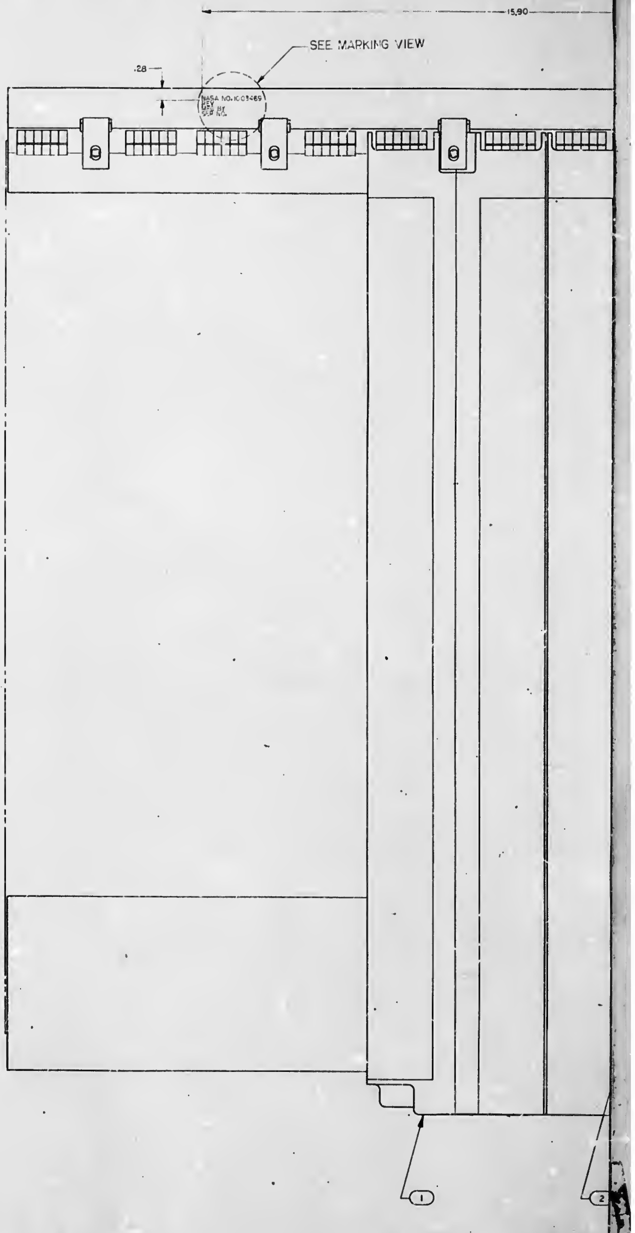
1003468

[illegible]





MARKING VIEW

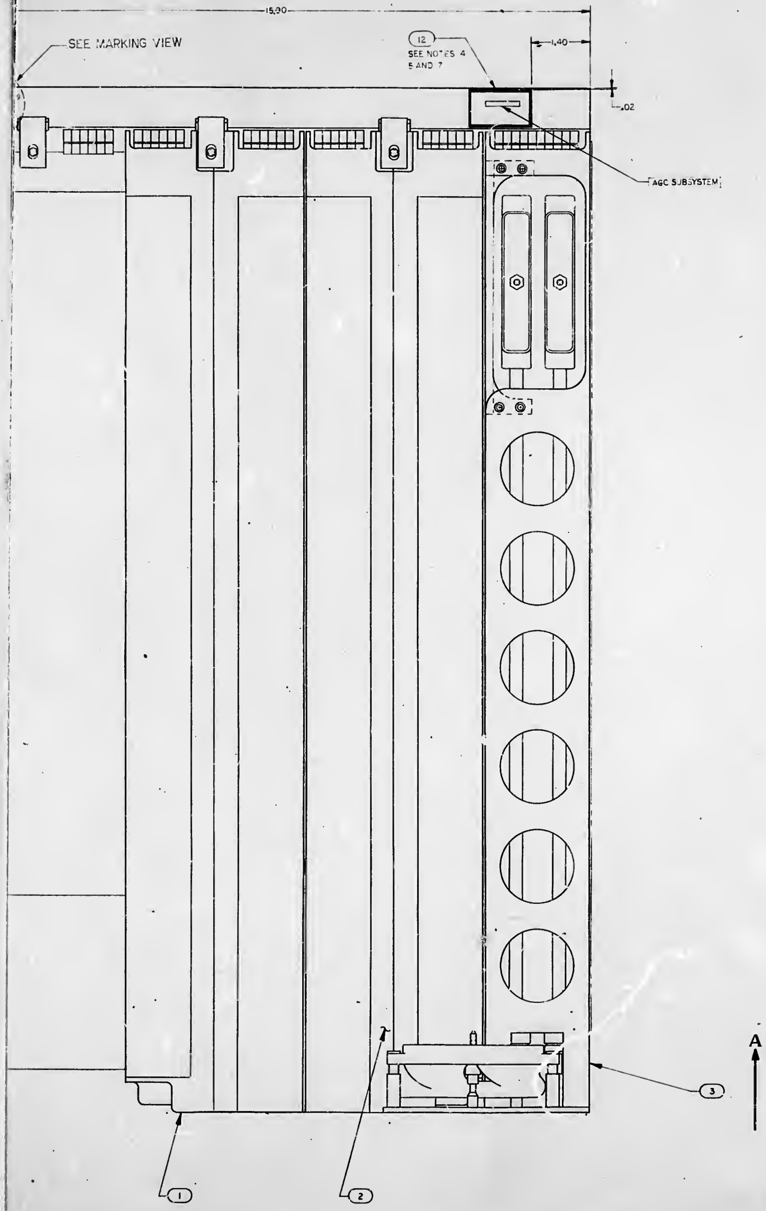


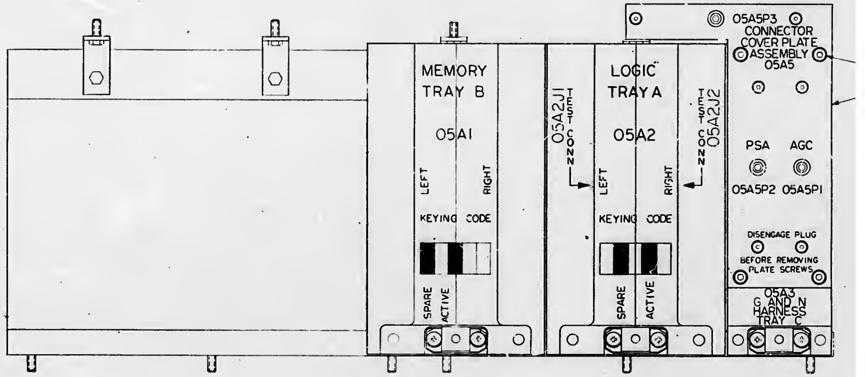
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. PHANTOM LINES DENOTE AGC COLDPLATE TO BE SUPPLIED BY NORTH AMERICAN AVIATION, INC REF PART NO. V16-614046-21X
3. FIND NO.6,8,9,10 AND 11 ARE TO BE SUPPLIED AND IDENTIFIED PER ND1002019
4. BOND FIND NO.12 TO FIND NO.1 USING MIL-A-5092, TYPE II
5. FIND NO.12 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 AND ASSOCIATED DASH NO.
6. MARK .09 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I, APPROX. AS SHOWN
7. SERIALIZE PER ND1002023

REFERENCE

1. 1020107 AGC TO HANDLING FIXTURE ASSY



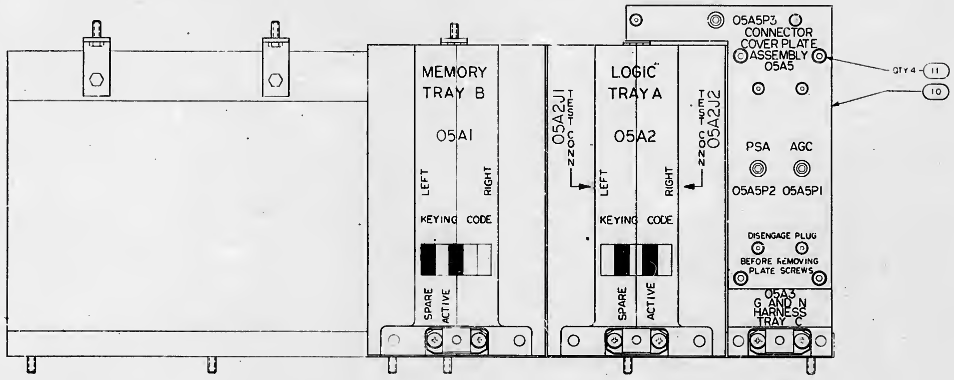


VIEW **A-A**

1003400
NEXT ASSY

1003469 B

SYM	DESCRIPTION	DATE	APPROVAL
A	INACTIVE PER TDRR 10611 DR CHK R.H.S.	8/24/64	
B	CHANGED PER TDRR 12597 DR CHK	9/3/64	



VIEW A-A

Ⓐ INACTIVE AFTER SYSTEM NO. 20
FOR NEW PROCUREMENT USE 1003477

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	1	1004657	PLATE IDENTIFICATION	12
SEE NOTE 3	4	1010630-28	SCREW, FLAT	11
	1	1003457	CONNECTOR COVER PLATE ASSY	10
	4	AN104608	SCREW, HEX HD	9
	4	AN104606	SCREW, HEX HD	8
	4	1004272	BRACKET, UPPER BRACE	7
SEE NOTE 3	14	1010630-58	SCREW, FLAT HD, HEX SOC	6
	1	1003180	PLATE, TOE	5
	1	1003466	CONNECTOR, COMPUTER END, ASSY	4
	1	1003197	G AND N HARNESS TRAY ASSY	3
	1	1003187	LOGIC TRAY A ASSY	2
	1	1003465	MEMORY TRAY B ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003400	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

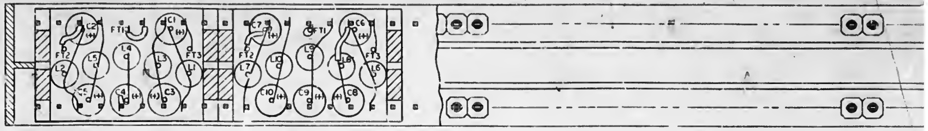
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R.D.R. DATE 17 June
CHECKED H.R. 17 JUN 64
APPROVAL 18 Jun 64
APPROVAL
NASA APPROVAL
MIT APPROVAL

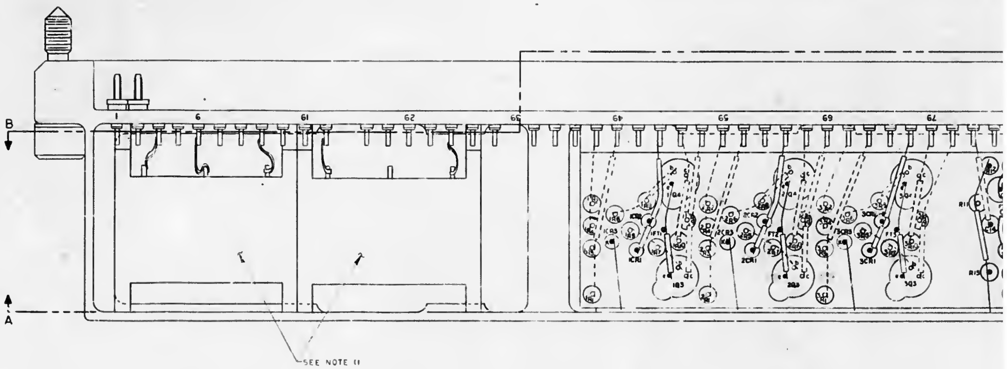
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

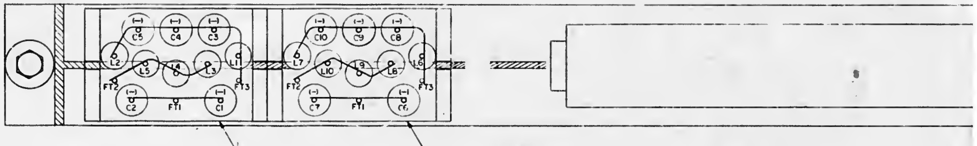
AGC ASSEMBLY

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003469
SCALE 1/1
WT
SHEET 1 OF 1

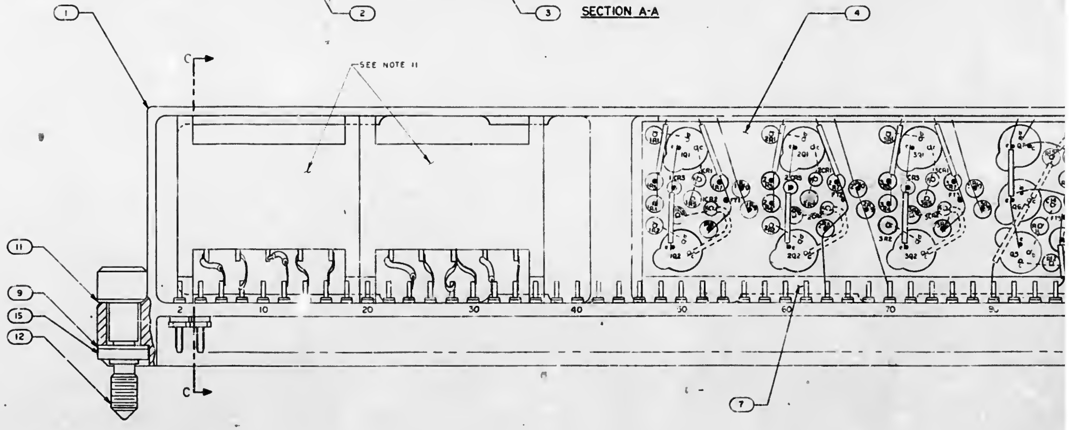


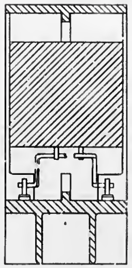
SECTION B-B





SECTION A-A





SECTION C-C

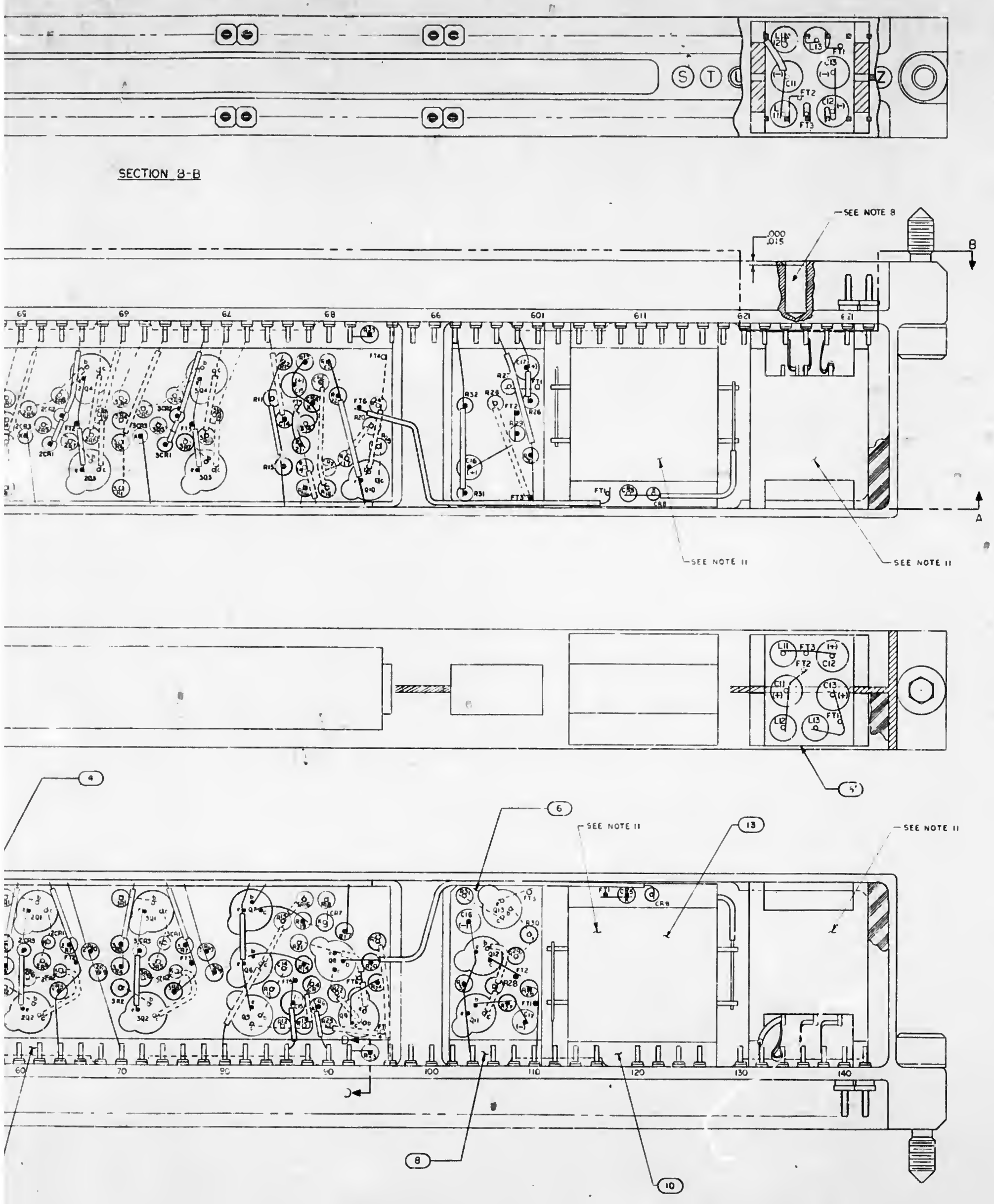
NOTES:

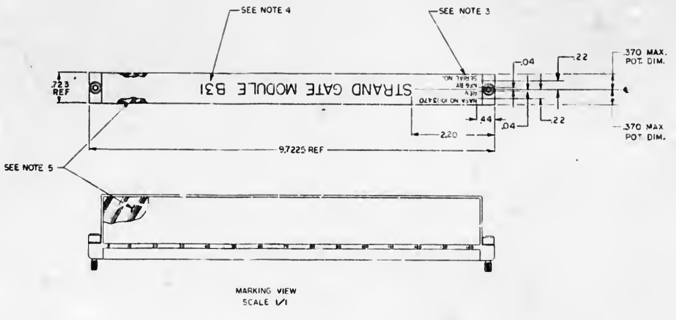
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, SERIALIZE PER ND1002023
4. MARK .250 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I
5. ENCAPSULATE MODULE PER ND1002002 BLACK POLYURETHANE FOAM IN INDICATED AREAS ONLY
6. BOND FIND NO. 2,3,5 TO FIND NO. 1 PER ND1002004
7. BOND FIND NO.7 TO FIND NOS. 1 AND 4 PER ND1002004
8. FILL KEYING HOLES MARKED A,E,G,H,U,W,X,Y USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND 1002183
9. BOND FIND NO. 8 TO FIND NO. 6 AND FIND NO. 1 PER ND 1002004
10. BOND FIND NO. 10 TO FIND NO. 13 AND FIND NO. 1 PER ND 1002004
11. COAT INDICATED SURFACES WITH CLEAR EPOXY PER ND1002035 .005 THK MAX.

1003470 SHT OF

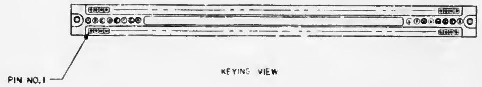
1003470 B

	REVISIONS		
A	REVISED PER TDRR 13115 DR R.P. CHK		
B	REVISED PER TDRR 13121 DR CHK		



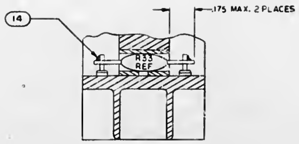


MARKING VIEW
SCALE 1/1



KEYING VIEW

(−) REPLACES 1003167 AFTER
SYSTEM NO. 20 WITH CHANGES



SECTION D-D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006189	SCHEMATIC	REF
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	15
AR	1006757-1	WIRE, ELECTRICAL .010 X .020	14
1	1003472	STRAND GATE MODULE SUB-ASSY 6	13
2	1004579-1	SCREW, JACKING	12
2	1004546-1	WASHER, FLAT	11
1	1004282	BLOCK, SPACER	10
2	1004546-3	WASHER, FLAT	9
1	1004279	BLOCK SPACER	8
1	1003182	STRAND GATE BLOCK SPACER SUB-ASSY	7
1	1003475	STRAND GATE MODULE SUB-ASSY 5	6
1	1003172	STRAND GATE MODULE SUB-ASSY 4	5
1	1003471	STRAND GATE MODULE SUB-ASSY 3	4
1	1003171	STRAND GATE MODULE SUB-ASSY 2	3
1	1003162	STRAND GATE MODULE SUB-ASSY 1	2
1	1003175	HEADER HOUSING ASSY	1

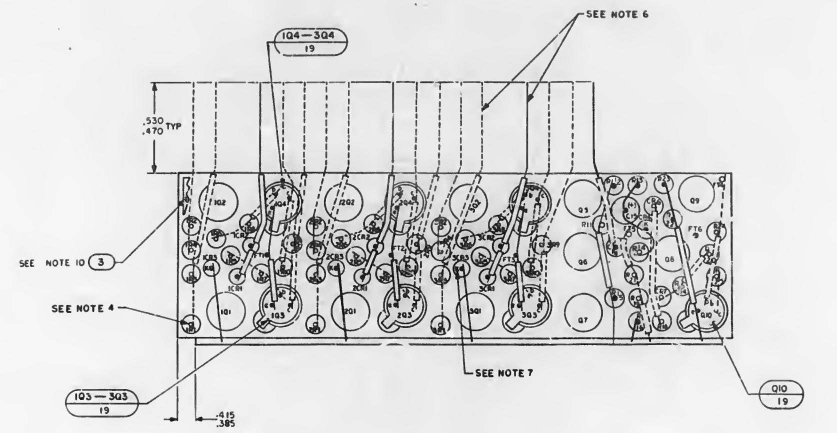
LIST OF MATERIALS

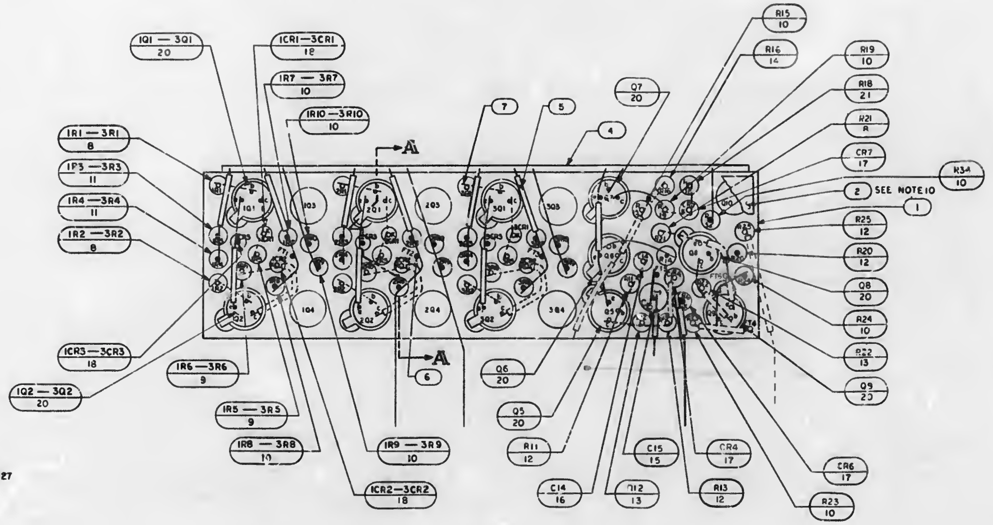
1003476		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ±	MIT INSTRUMENTATION LAB CAMBRIDGE MASS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING	DRAWN P. DATE	STRAND GATE MODULE ASSY B31
APPLICATION		MATERIAL	CHECKED R. Edwards	
		HEAT TREATMENT	APPROVAL	
		FINAL FINISH	APPROVAL	
			NASA APPROVAL	CODE IDENT NO. — SIZE J NASA DRAWING NO. 1003470
			MIT APPROVAL	SCALE 4/1 WT SHEET 1 OF 1

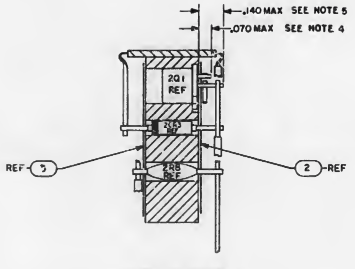
1003470 SHT OF

1003471	–

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL







SECTION A-A

⊖ REPLACES 1003166 AFTER SYSTEM NO. 20 WITH CHANGES

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE FIND NO.8 THRU FIND NO.20 PER ND 1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. DASHED LINES INDICATE FIRST LEVEL WIRING AND SOLID LINES INDICATE SECOND LEVEL WIRING
7. K DENOTES CATHODE SIDE OF DIODE
8. FT DENOTES FEED THRU
9. AR DENOTES AS REQUIRED
10. ON FIND NO. 2 AND FIND NO 3 FIRST LEVEL WIRING ONLY IS SHOWN, WITH UNSLEEVED WIRE SOLID, AND SLEEVED WIRE SHOWN DASHED

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1006189	SCHEMATIC	REF
1	1006750-35	RESISTOR	21
11	1006752	TRANSISTOR	20
7	1006753	TRANSISTOR	19
10	1006751	DIODE	18
2	1006838	DIODE	17
1	1006777-20	CAPACITOR	16
1	1006755-57	CAPACITOR	15
1	1006750-24	RESISTOR	14
2	1006750-49	RESISTOR	13
3	1006750-56	RESISTOR	12
6	1006750-43	RESISTOR	11
18	1006750-39	RESISTOR	10
6	1006750-32	RESISTOR	9
7	1006750-15	RESISTOR	8
AR	1006757-1	WIRE, ELECTRICAL .010 X.020	7
AR	1006757-8	WIRE, ELECTRICAL .020 DIA	6
AR	1006776-22	INSULATION SLEEVING	5
1	1003168	MATRIX ASSY	4
1	1004647-1	INSULATOR	3
1	1004647-2	INSULATOR	2
1	1004646	HOLDER COMPONENT	1

LIST OF MATERIALS

1003470	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN P. Bousquet DATE 7 Aug 64
CHECKED R. Eckman 12 Aug 64
APPROVAL 17 Aug 64
APPROVAL E. J. 9/4/64
NASA APPROVAL 9/4/64
MIT APPROVAL 9/1/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

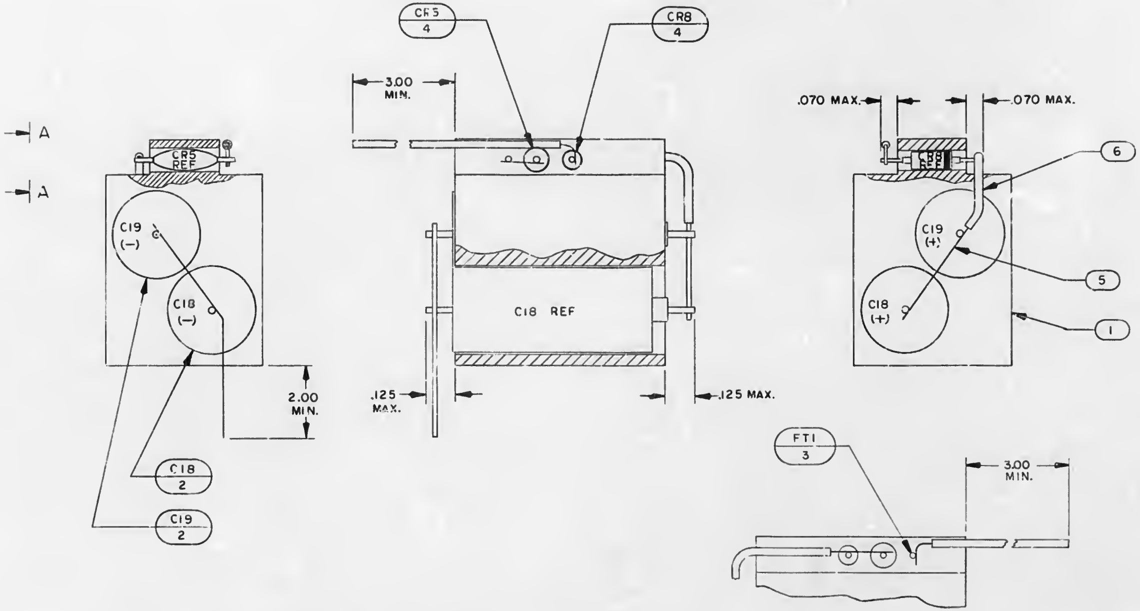
STRAND GATE MODULE
SUBASSEMBLY 3

CODE IDENT NO. —— SIZE E NASA DRAWING NO. 1003471
SCALE 4/1 WT SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

— 1003472

REVISIONS 10611			
SYM	DESCRIPTION	DATE	APPROVAL



VIEW A-A

⊖ REPLACES 1003206 AFTER SYSTEM NO. 20
WITH CHANGES

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. AR DENOTES AS REQUIRED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006189	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	6
AR	1006757-1	WIRE ELECTRICAL .010 x .020	5
2	1006751	DIODE	4
AR	1006757-8	WIRE, ELECTRICAL, .020 DIA	3
2	1006755-134	CAPACITOR	2
1	1004645	HOLDER COMPONENT	1

LIST OF MATERIALS

1003470	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT

DRAWN R. Boudreau DATE 8 Aug 64
CHECKED R. Edmonds 12 Aug 64
APPROVAL R. Masters
APPROVAL E. J. Dugan 9/1/64
NASA APPROVAL 9/1/64
MIT APPROVAL 9/1/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

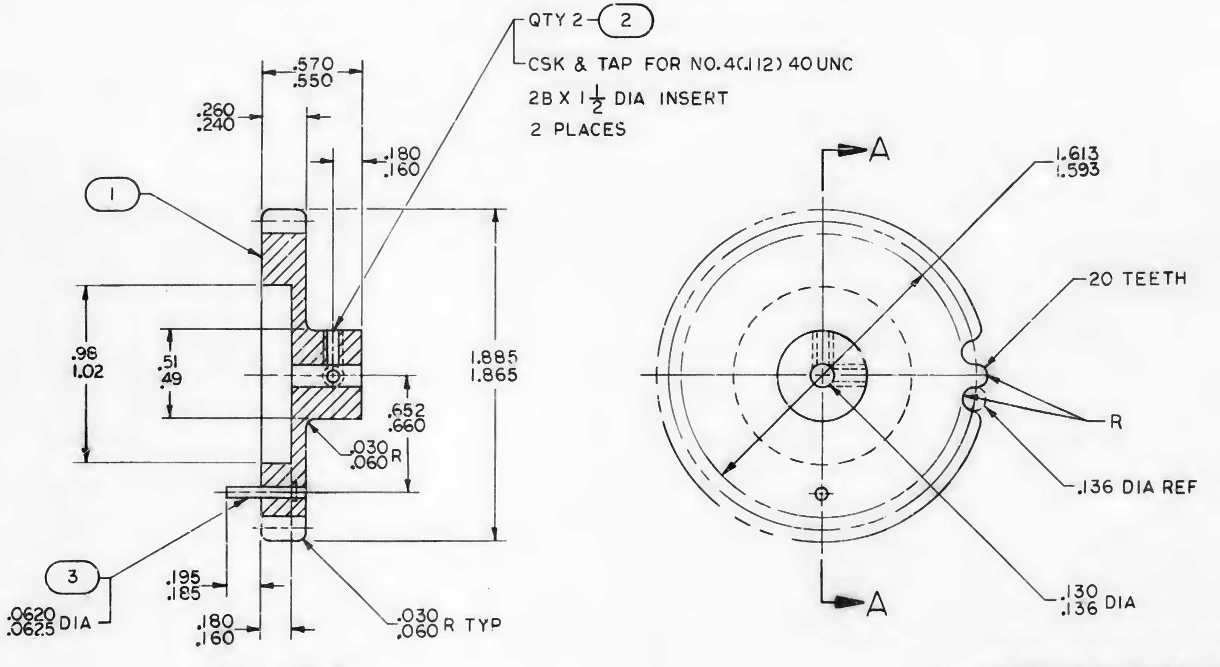
STRAND GATE MODULE
SUBASSEMBLY 6

CODE IDENT NO —
SIZE D
NASA DRAWING NO 1003472
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1003473

REVISIONS 1039			
SYM	DESCRIPTION	DATE	APPROVAL



SECTION A-A

REPLACES 1004114 AFTER SYSTEM NO.7 WITH CHANGES

NOTES
FIND NO. 1

1. MATL: 6061-T6 AL PER QQ-A-325, TEMP T6
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
3. REMOVE BURRS & SHARP EDGES

NOTES
ASSEMBLY

1. INSTALL FIND NO.2 PER MS33646-BREAK OFF DRIVING TANG
2. COAT THREADS AND FIND NO 2 WITH MIL-P-8585, WET ZINC CHROMATE
3. MASK TAPPED HOLES AND THRU HOLE AND ANODIZE PER MIL-A-8625, TYPE I, DYED LIGHT GREY PER FED. STD-595, COLOR NO. 26440

1	MS16555-604	PIN, STOP	3
2	MS21209-C0415	INSERT, SCREW THREAD LOCKING	2
1	1003473-1	THUMB WHEEL	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1003524	
NEXT ASSY	USED ON
APPLICATION	

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE 1
HEAT TREATMENT
NONE
FINAL FINISH
SEE NOTE 2 (ASSY)

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN B. [illegible] DATE 8 JUN 64
CHECKED C. R. Bogue 12 JUN 64
APPROVAL [illegible] 16 June 64
APPROVAL D. J. [illegible] 6-23-64
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL W. [illegible] 23 Jun 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

THUMB WHEEL ASSY
AGC DSKY MAIN & NAV

CODE IDENT NO.	SIZE	NASA DRAWING NO.
———	C	1003473

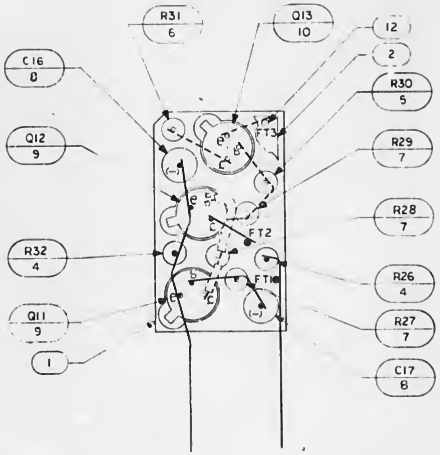
SCALE 2/1 WT SHEET 1 OF 1

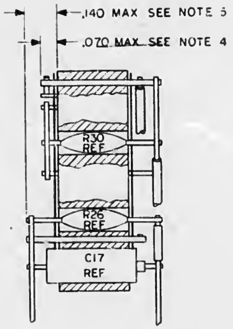
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

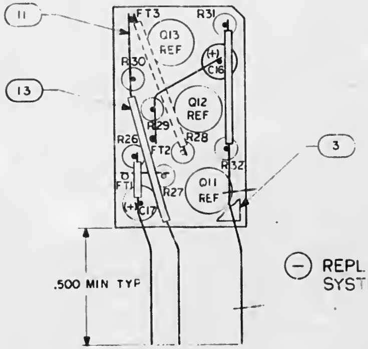
1003475 A

REVISIONS 10611

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13434 DR R.D. Guibord CHK	11/11/64	HWC







(–) REPLACES 1003183 AFTER SYSTEM NO. 20 WITH CHANGES

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. DASHED LINES INDICATE FIRST LEVEL WIRING AND SOLID LINES INDICATE SECOND LEVEL WIRING
7. FT DENOTES FEED THRU
8. AR DENOTES AS REQUIRED
9. ON FIND NO.2 AND FIND NO.3 FIRST LEVEL WIRING ONLY IS SHOWN, WITH UNSLEEVED WIRE SOLID AND SLEEVED WIRE SHOWN DASHED
10. IDENTIFY PER ND 1002019

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006189	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	13
AR	1006757-8	WIRE, ELECTRICAL	12
AR	1006757-1	WIRE, ELECTRICAL .010 X.020	11
1	1006753	TRANSISTOR	10
2	1006752	TRANSISTOR	9
2	1006755-69	CAPACITOR	8
3	1006750-56	RESISTOR	7
1	1006750-43	RESISTOR	6
1	1006750-39	RESISTOR	5
2	1006750-24	RESISTOR	4
1	1004280-2	INSULATOR	3
1	1004280-1	INSULATOR	2
1	1004281	HOLDER, COMPONENT	1

LIST OF MATERIALS

1003470	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
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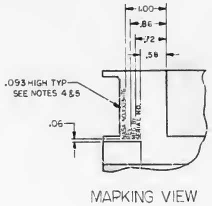
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN DATE
CHECKED 12 Aug 64
APPROVAL 15 Aug 64
APPROVAL
NASA APPROVAL
MIT APPROVAL

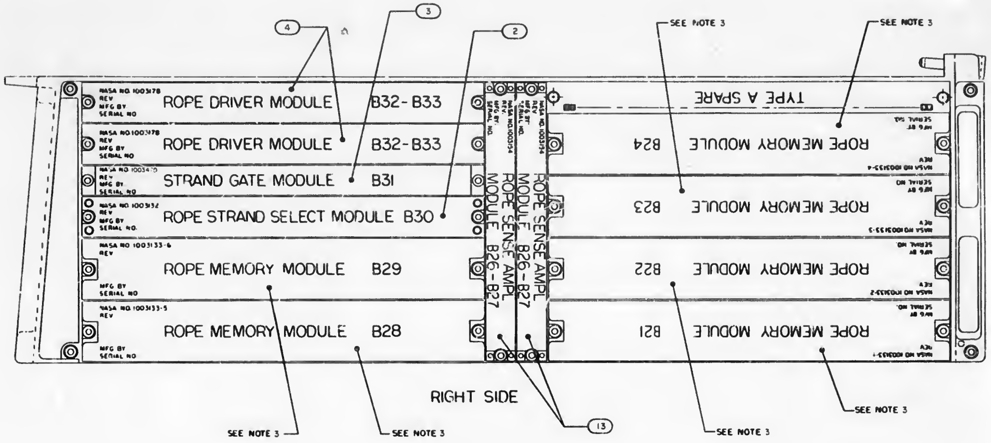
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

STRAND GATE MODULE SUBASSEMBLY 5

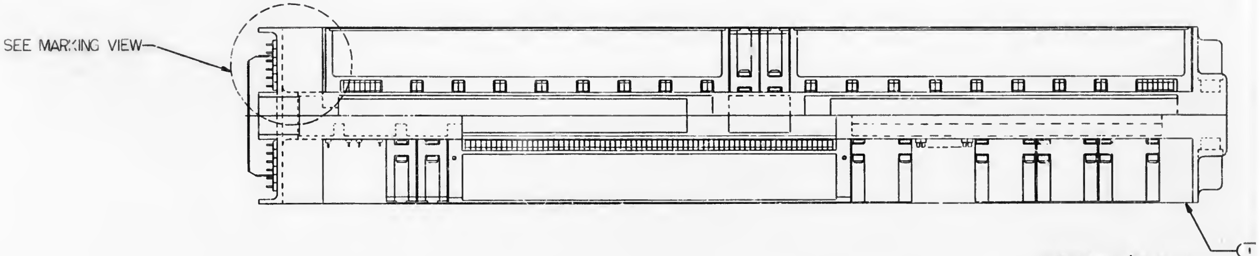
CODE IDENT NO —
SIZE D
NASA DRAWING NO. 1003475
SCALE 4/1
WT
SHEET 1 OF 1

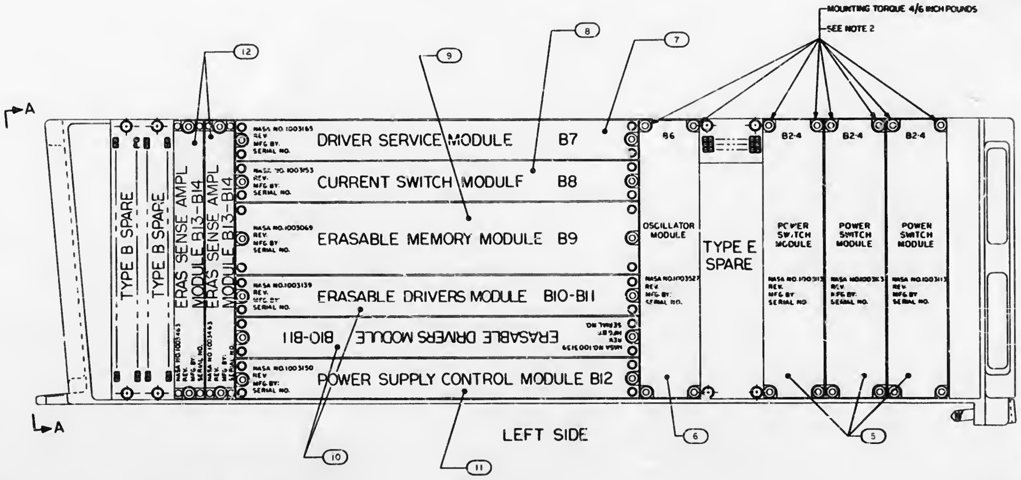


MARKING VIEW

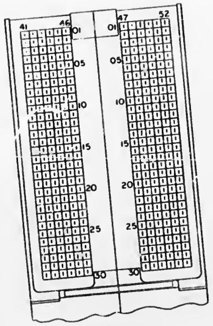


RIGHT SIDE





LEFT SIDE

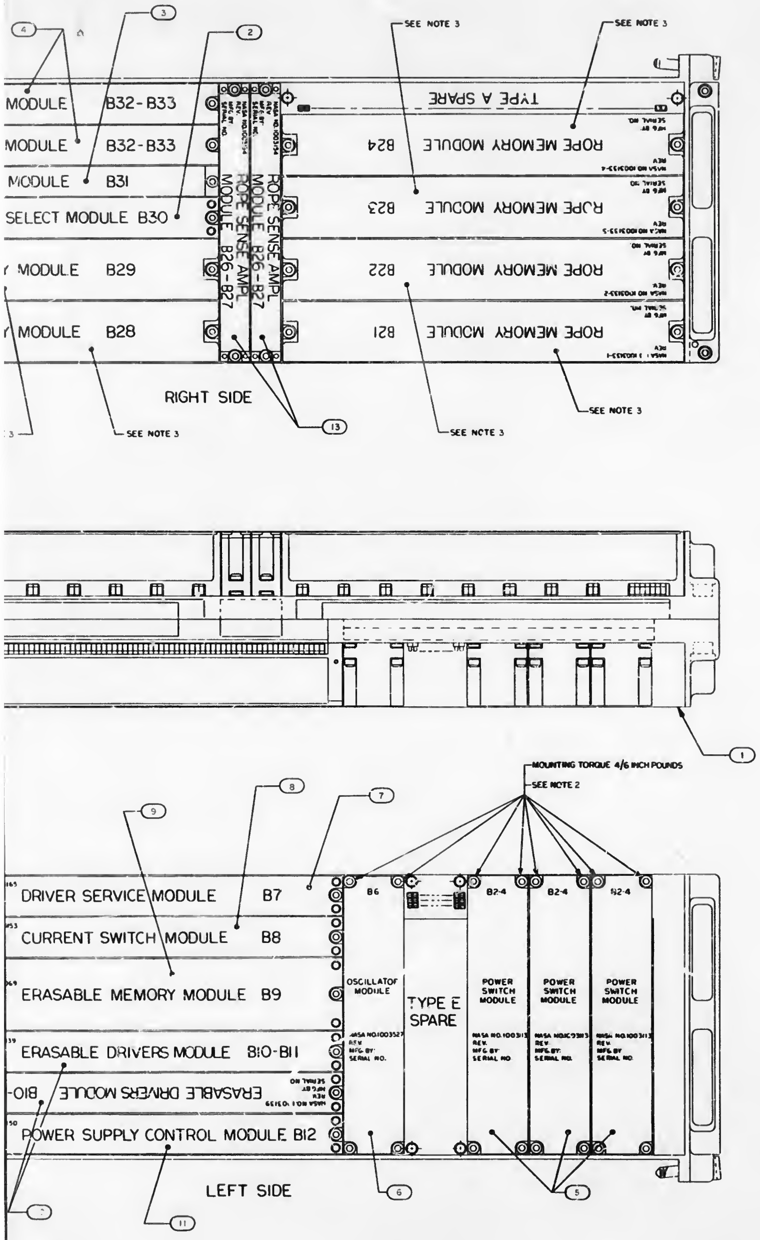


VIEW A-A

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. UNLESS OTHERWISE SPECIFIED TORQUE ALL MODULE MOUNTING & TRAY HALF RETAINING SCREWS 15/19 INCH POUNDS
3. ROPE MODULES ARE SHOWN FOR REFERENCE ONLY
4. MARKING AND LETTERING WHITE PER ND1002019 AND ND1002122, TYPE II, CLASS 2
5. SERIALIZE PER ND1002023

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12315 DR J.P. CHK RTM	11/5/64	
B	REVISED PER TDRR 13119 DR R. Goodrol CHK RTM	10/9/64	



⊖ REPLACES 1003465 AFTER SYSTEM NO.20 WITH CHANGES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1003154	ROPE SENSE AMPLIFIER MODULE	13
2	1003463	ERASABLE SENSE AMPL MODULE	12
1	1003150	POWER SUPPLY CONTROL MODULE	1
2	1003139	ERASABLE DRIVER MODULE	[illegible]
1	1003069	ERASABLE MEMORY MODULE	9
1	1003153	CURRENT SWITCH MODULE	8
1	1003165	DRIVER SERVICE MODULE	7
1	1003527	OSCILLATOR MODULE	6
3	1003113	POWER SWITCH MODULE	5
2	1003179	ROPE DRIVER MODULE	4
1	1003470	STRAND GATE MODULE	3
1	1003132	ROPE STRAND SELECT MODULE	2
1	1003468	TRAY B WIRED ASSEMBLY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003477	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
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MATERIAL
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FINAL FINISH

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Cambridge, Mass.

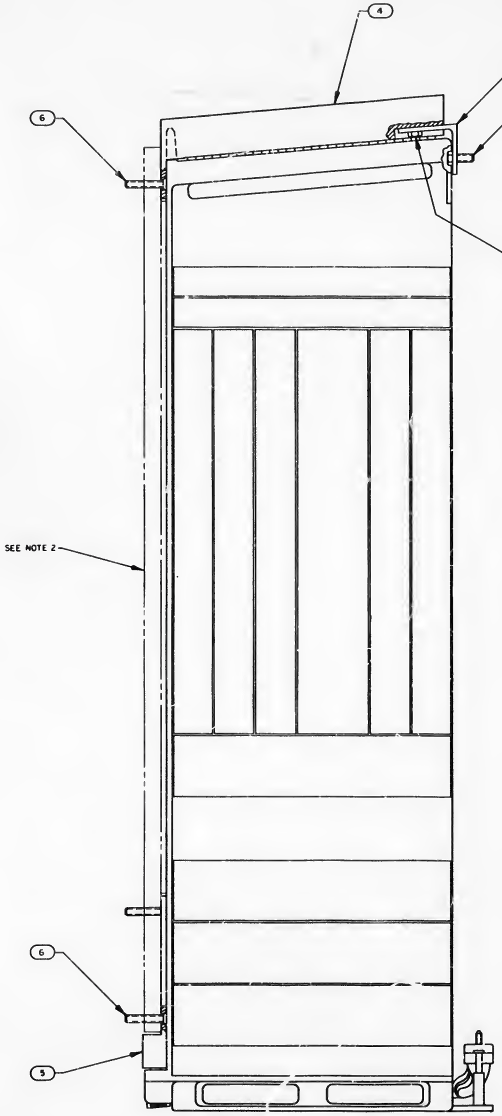
DRAWN S.P. Tomak DATE 17 Aug 64
CHECKED R. Eckernack 17 Aug 64
APPROVAL R.T. Mattson
APPROVAL
NASA APPROVAL
MIT APPROVAL D. Wolf

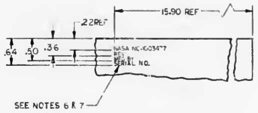
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MEMORY TRAY B ASSEMBLY

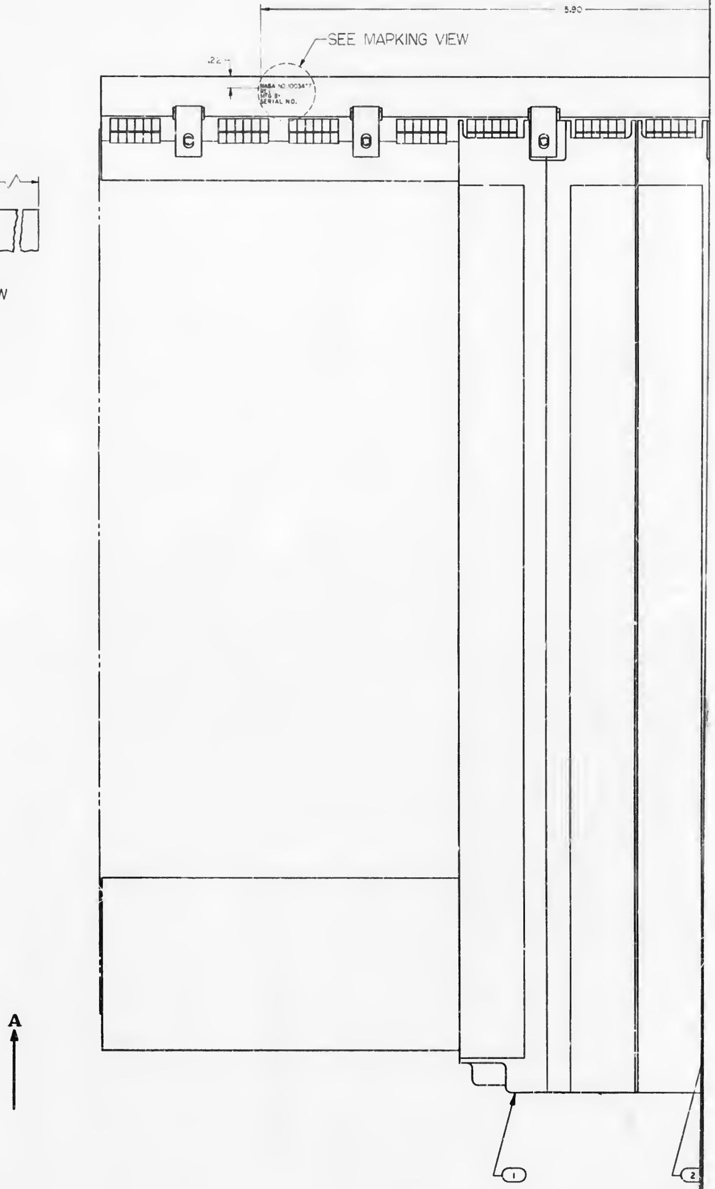
CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003476
SCALE 1/1
WT
SHEET 1 OF 1

1003476 B





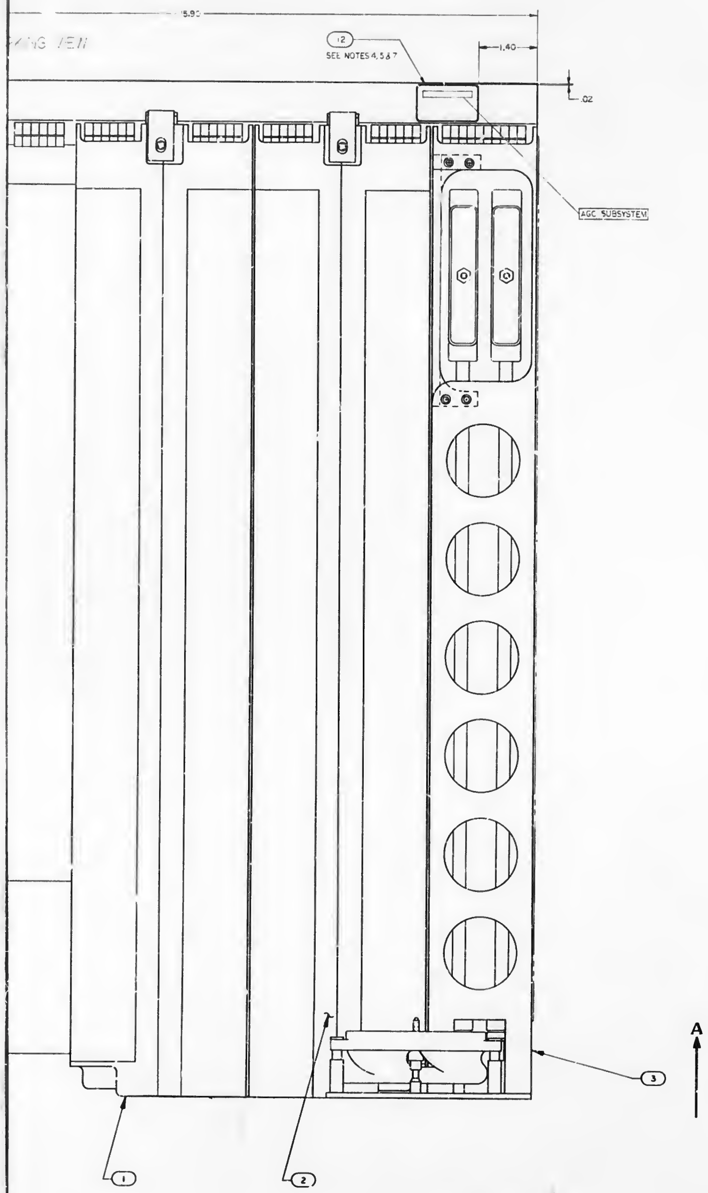
MARKING VIEW

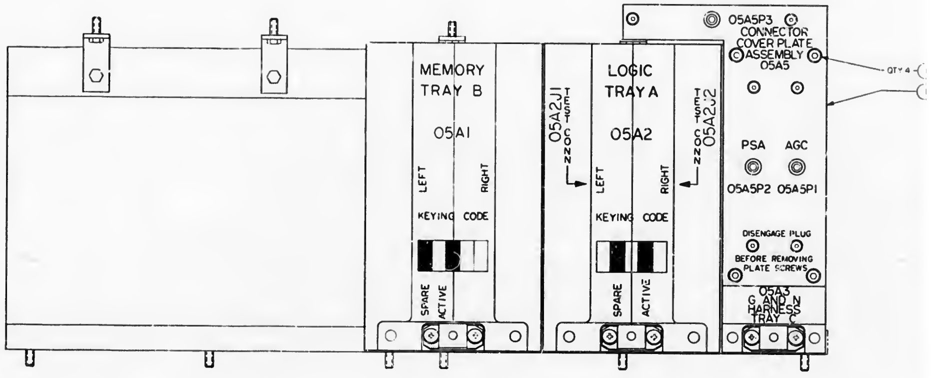


NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. PHANTOM LINES DENOTE AGC COLDPLATE TO BE SUPPLIED BY NORTH AMERICAN AVIATION, INC REF PART NO. V16-614046-21X
3. FIND NO. 6, 8, 9, 10 & 11 ARE TO BE SUPPLIED AND IDENTIFIED PER ND1002019
4. BOND FIND NO.12 TO FIND NO.1 USING MIL-A-5092, TYPE II
5. FIND NO.12 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 AND ASSOCIATED DASH NO.
6. MARK .093 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS I
7. SERIALIZE PER ND1002023

REFERENCE
1020107 AGC TO HANDLING FIXTURE ASSY



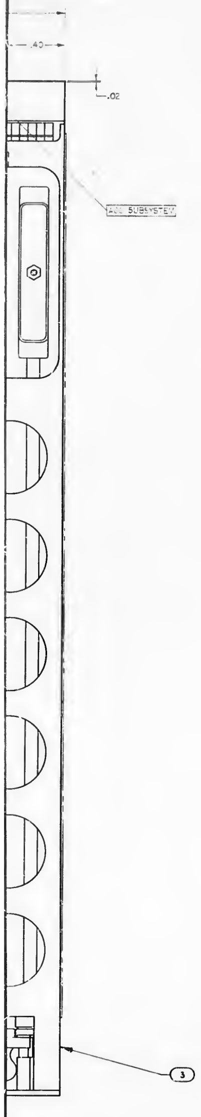


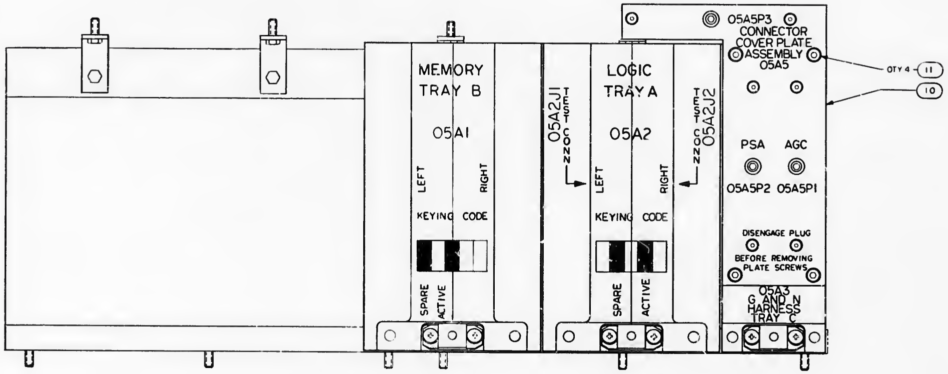
VIEW **A-A**

003400	
NEXT ASSY	USED ON
APPLICATION	

1003477 B

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 12315 DR CHK	10/5/64	
B	REVISED PER TDRR 13119 DR CHK	12/9/64	





VIEW A-A

⊖ REPLACES 1003469 AFTER SYSTEM NO.20 WITH CHANGES

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	1	1004657	PLATE, IDENTIFICATION	12
SEE NOTE 3	4	1010630-38	SCREW, FLAT	11
	1	1003457	CONNECTOR COVER PLATE ASSY	10
	4	AN104608	SCREW, HEX HD	9
	4	AN104606	SCREW, HEX HD	8
	4	1004272	BRACKET, UPPER BRACE	7
SEE NOTE 3	14	1010630-58	SCREW, FLAT HD, HEX SOC	6
	1	1003180	PLATE, TOE	5
	1	1003466	CONNECTOR, COMPUTER END, ASSY	4
	1	1003197	G AND N HARNESS TRAY ASSY	3
	1	1003187	LOGIC TRAY A ASSY	2
	1	1003476	MEMORY TRAY B ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003400	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.02 ANGLES ± —
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MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN J.L. DATE
CHECKED R.
APPROVAL 17 Aug 64
APPROVAL
NASA APPROVAL
MIT APPROVAL 9/1/64

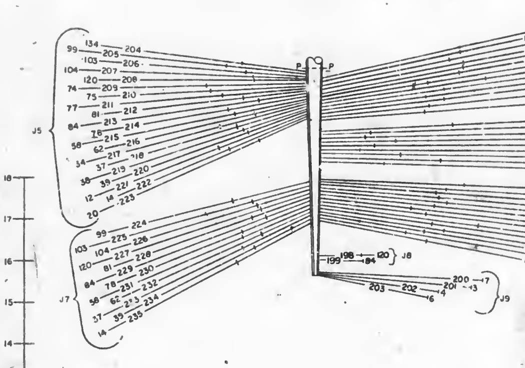
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

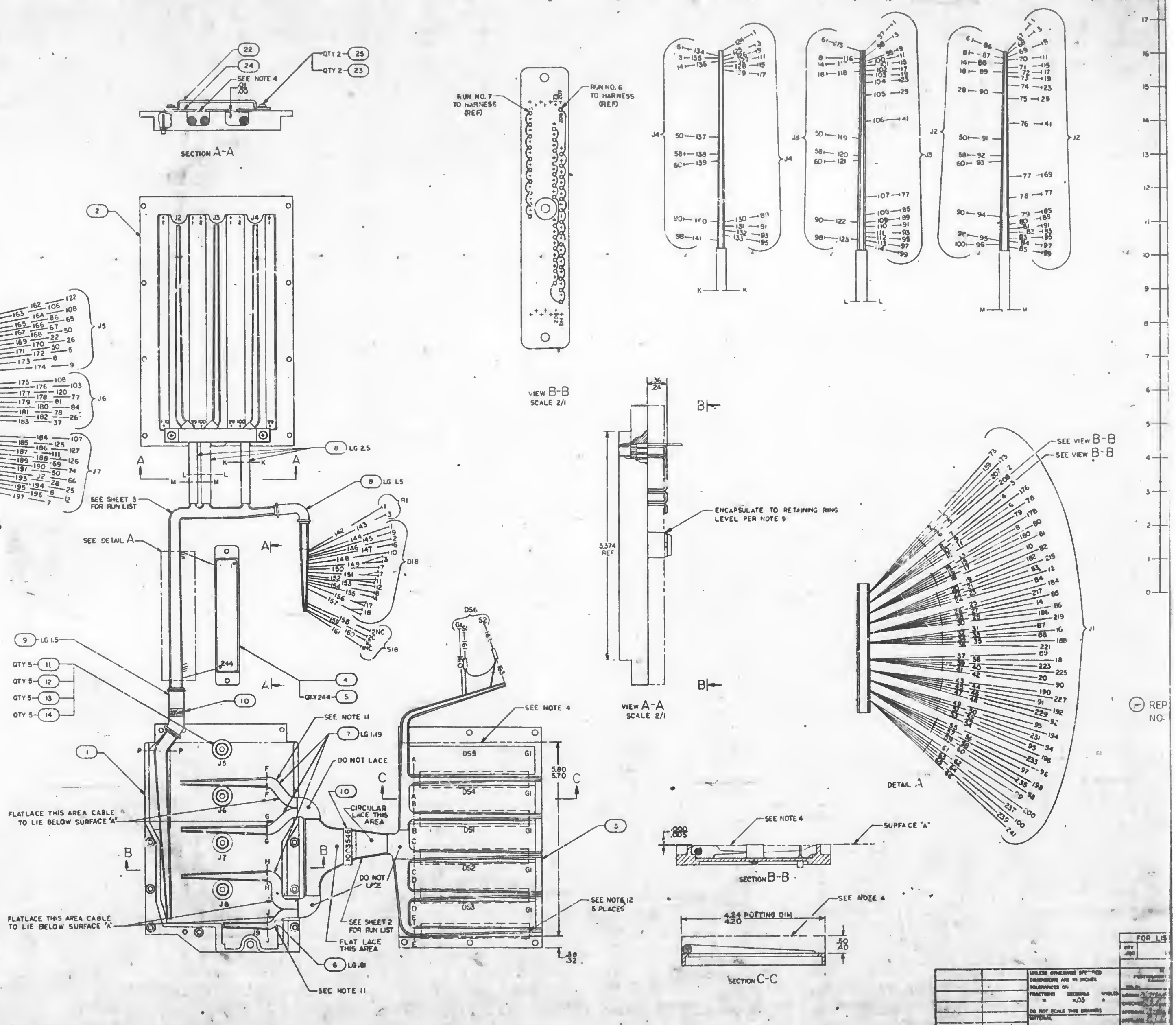
AGC ASSEMBLY

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003477
SCALE 1/1
WT
SHEET 1 OF 1

1003477 R

03477 B





NOTES

1. FOR SYMBOLS FABRICATION AND REQD TEST SEE ND1002032
   1A. STRIP ALL LEADS .19 & TIN
2. MIL-I-23053 CLASS 2, COLOR BLACK, FOR FIND NO.6 SIZE NO.6, FOR FIND NO.7 SIZE NO.0, FOR FIND NO. 8 SIZE NO.4, FOR FIND NO.15 SIZE NO.10, FOR FIND NO.16 SIZE NO.16
3. MIL-I-631, TYPE F, FORM U4, GRADE A, CLASS I, CATEGORY 1, FOR FIND NO. 9 AWG SIZE 7/16
4. ENCAPSULATE INDICATED AREAS PER ND1002217
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
6. SOLDER PER ND10002071
7. TERMINATE ALL SHIELDS AT FIND NO.1 WITHIN HARNESS JUST BEFORE POINT OF BREAKOUT WITH .37 OF FIND NO.16
8. ✱✱ DENOTES LENGTH IN FEET
9. ENCAPSULATE INDICATED AREA PER ND1002009 METHOD E
10. ● ALL CONNECTIONS TO FIND NO 1 (WHEN USING FIND NO 20), TO BE MADE BY WIRE WRAP PER ND1002031 OR SOLDER PER ND10002071
11. LACE HARNESS TO FIND NO.1 THRU HOLES
12. SECURE HARNESS IN INDICATED AREA BY STAKING PER ND1002004

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
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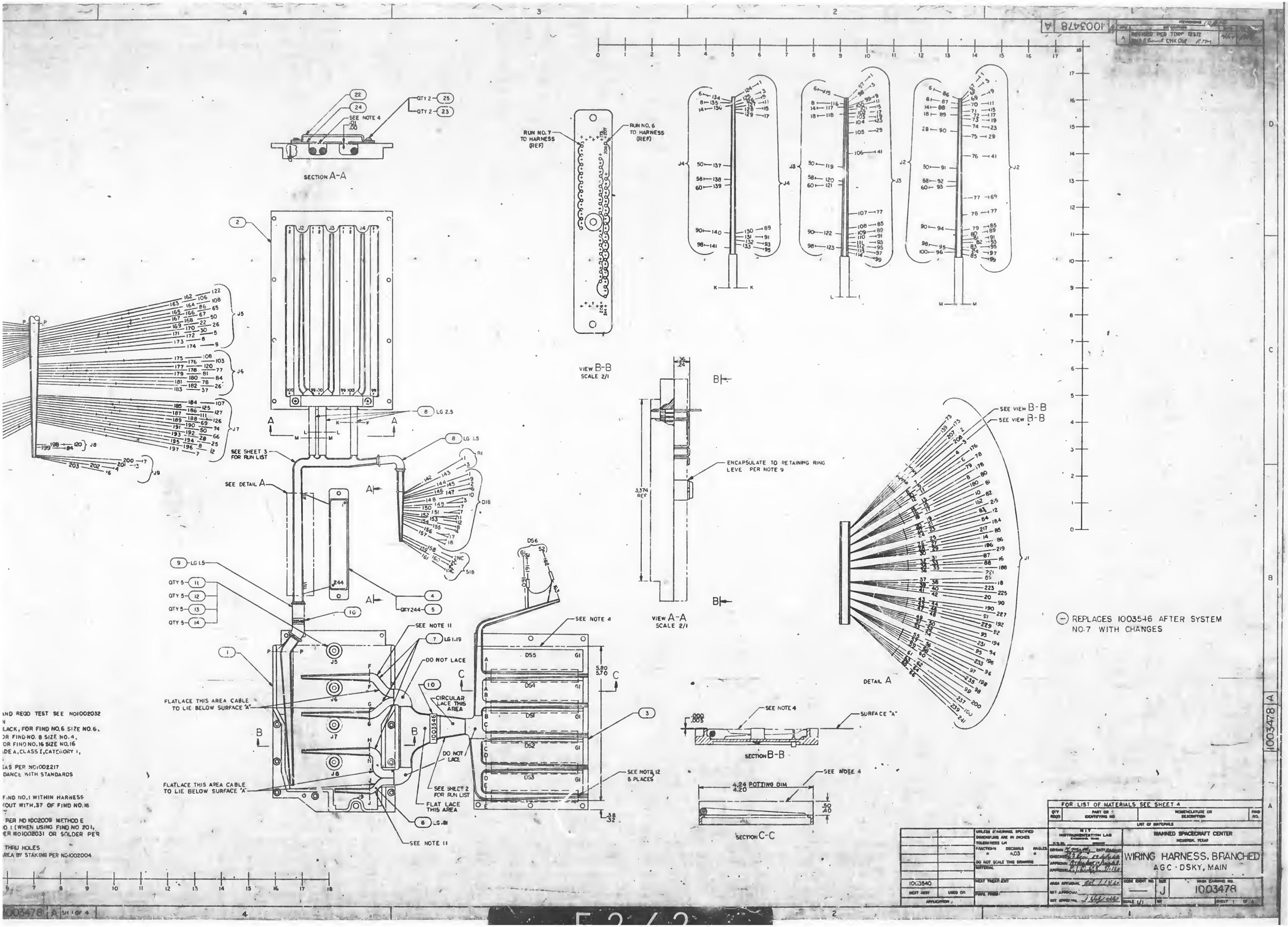
MATERIAL
HEAT TREATMENT

1003540	
NEXT ASSY	USED ON
APPLICATION	

FOR LIS

1003478 A F-1/2

SHEET 1



ND REQD TEST SEE NO1002032
N
LACK, FOR FIND NO.6 SIZE NO.6,
OR FIND NO. 8 SIZE NO.4,
OR FIND NO.16 SIZE NO.16
DE A, CLASS I, CATEGORY I,

AS PER NO1002217
DANCE WITH STANDARDS

FIND NO.1 WITHIN HARNESS
OUT WITH .37 OF FIND NO.16

PER NO 1002009 METHOD E
O 1 (WHEN USING FIND NO 201,
ER NO1002031 OR SOLDER PER

THRU HOLES
REA BY STAKING PER NO1002004

Ⓐ REPLACES 1003546 AFTER SYSTEM NO.7 WITH CHANGES

1003478 A

LTR	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 12312 [illegible] CHK Out R.T.M.	[illegible]	[illegible]

FOR LIST OF MATERIALS SEE SHEET 4

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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FRACTIONS ± DECIMALS ±.03 ANGLES ±
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1003540
NEXT ASSY
USED ON
APPLICATION

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DESIGN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC · DSKY, MAIN

CODE IDENT NO. ——
SIZE J
NASA DRAWING NO. 1003478
SCALE 1/1
WT
SHEET 1 OF 4

1003478 A SH 1 OF 4

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 12342 DR'L Kent CHK Gil		

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	74	SHLD	30	21	161	*
*	162				118	
*	302				119	
	125				318	*
	127				180	*
*	181				112	
	111				293	*
*	297				96	
*	189				92	
*	249				86	
*	235				80	
*	170				110	
	103				205	*
*	252				137	
	138				253	*
	24				242	*
	71				228	*
	157				221	*
*	268				145	
	152				282	*
	133				329	*
*	322				41	
*	332				67	
	51				333	*
	35				308	*
	47				261	*
*	289				65	
	58				275	*
	22				177	*
*	212				15	
*	196	SHLD	30	21	5	
SEE NOTE 10 TYP ●	120	WHT	30	20	303	
	317				130	●
●	93				191	
●	90				251	
●	81				237	
●	101				172	
	207				102	●
	244				23	●
	229				68	●
	223				154	●
●	144				270	
	284				143	●
	331				134	●
●	45				324	
	310				36	●
	263				48	●
●	56				291	
	277				57	●
	179				13	●
●	14				214	
●	6	WHT	30	20	199	
	163	WHT	26	19	169	
	182				220	
	254				260	
	294				300	
	334	WHT	26	19	335	
	160	WHT	30	20	164	
	164				215	
	215				255	
	255				295	
	295				132	●
●	29				241	
	240				28	●
●	27				243	
	239				26	●
●	25				238	
	234				75	●
●	76				233	
	236				77	●
●	78				232	
	245				87	●
●	82				247	
	250				84	●
●	83				248	
	246				85	●
●	79	WHT	30	20	231	

* SEE GROUND SHEATH CONNECTION CHART

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	229	WHT	30	20	70	●
SEE NOTE 10 TYP ●	73				226	
	227				72	●
●	69				225	
	224				66	●
●	64				287	
	290				62	●
●	63				288	
	286				61	●
●	60				286	
	283				149	●
●	151				280	
	281				150	●
●	148				279	
	278				147	●
●	146				264	
	265				141	●
●	142				269	
	266				140	●
●	139				267	
	271				59	●
●	55				276	
	274				52	●
●	53				273	
	272				54	●
●	50				257	
	256				49	●
●	46				262	
	259				43	●
●	44				258	
	222				156	●
●	159				218	
	219				158	●
●	155				217	
	216				153	●
●	136				326	
	330				131	●
●	135				325	
	328				128	●
●	129				327	
	323				39	●
●	42				318	
	321				38	●
●	40				319	
	320				37	●
●	34				304	
	305				33	●
●	32				309	
	307				30	●
●	31				306	
	303				123	●
●	126				311	
	31				124	●
●	122				314	
	313				121	●
●	117				296	
	297				116	●
●	115				302	
	299				113	●
●	114				298	
●	109				167	
	165				105	●
●	108				168	
	166				106	●
●	107				171	
	173				17	●
●	18				174	
	175				21	●
●	20				176	
	178				19	●
●	16				208	
	213				12	●
●	9				211	
	210				10	●
●	11				209	
	206				100	●
●	104				200	
	201				99	●
●	98				202	
	203	WHT	30	20	97	●

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
SEE NOTE 10 TYP ●	95	WHT	30	20	185	
	184				94	●
●	91				190	
	186				89	●
●	88				187	
	192				7	●
●	8				193	
	194				3	●
●	2				195	
	198	WHT	30	20	4	●
	1	WHT	26	19	183	
	183				188	
	197	WHT	28	19	204	

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
161	162	2	19
170	177	2	
177	180	3	
180	181	1.25	
189	196	2	
212	205	2	
221	228	2	
228	235	2	
235	242	2	
242	249	2	
249	252	1.50	
252	253	1-	
261	268	2	
268	275	2	
275	282	2	
277	282	1.50	
282	289	2	
289	292	1.50	
292	293	1	
301	303	2	
308	315	2	
315	322	2	
322	329	2	
329	332	1.50	
332	333	1	19

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003540	
NEXT ASSY	USED ON
APPLICATION	

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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, MAIN

CODE IDENT NO
SIZE J
NASA DRAWING NO 1003478
SCALE NONE
WT
SHEET 2 OF 4

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	59	WHT	26	19	67	
	69				40	
	44				72	
	73				47	
	9				75	
	76				66	
	16				80	
	81				13	
	20				83	
	84				25	
	51				97	
	99				55	
	21				102	
	103				26	
	65				105	
	106				63	
	35				109	
	110				30	
	43				112	
	113				46	
	31				124	
	126				36	
	39				129	
	130				54	
	50				131	
	133				62	
	33				144	
	145				23	
	10				146	
	147				38	
	18				148	
	149				3	
	4				151	
	151				6	
	5				152	
	152				7	
	14				153	
	155				28	
	2				156	
	158				11	
	2				159	
	160				8	
	41				166	
	169				53	
	34				177	
	179				37	
	42				181	
	60				184	
	185				19	
	64				186	
	187				56	
	57				188	
	189				15	
	22				192	
	193				61	
	17				194	
	197				24	
	52				198	
	200				58	
	1				202	
	27				208	
	212				29	
	32				214	
	227				45	
	48				228	
	230				49	
	77				157	
	157				143	
	154				161	
	150	WHT	26	19	90	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
WIRE WRAP PER NOTE 10 J5 REF	162	WHT	30	20	91	
	163				92	
	164				78	
	165				96	
	167				141	
	168				128	
	170				107	
	171				108	
	172				121	
	173				136	
	174				120	
WIRE WRAP PER NOTE 10 J6 REF	175				119	
	176				122	
	178				79	
	180				85	
	182				93	
	183				111	
WIRE WRAP PER NOTE 10 J7 REF	190				115	
	191				100	
	195				116	
	196				98	
SEE NOTE 10 J8 REF	199				132	
WIRE WRAP PER NOTE 10 J9 REF	201				142	
	203				156	
WIRE WRAP PER NOTE 10 J5 REF	204				149	
	205				125	
	206				82	
	207				101	
	209				135	
	210				86	
	211				137	
	213				94	
	215				118	
	216				117	
	217				68	
	218				95	
	219				138	
	220				104	
	221				127	
	222				134	
	223				139	
WIRE WRAP PER NOTE 10 J7 REF	224				74	
	225				114	
	226				70	
	229				123	
	231				88	
	232				87	
	233				140	
	234				71	
	235	WHT	30	20	89	

CONNECTOR JUMPER LIST

		DESCRIPTION				
REMARKS	FROM	COLOR	AWG	FIND NO	TO	REMARKS
CABLE GROUP III REF	J1-21	WHT	26	19	J1-19	
	J1-19				J1-17	
	J1-17				J1-15	
	J1-15				J1-13	
	J1-13				J1-11	
	J1-11				J1-9	
	J1-9				J1-7	
	J1-7				J1-5	
	J1-5				J1-3	ALSO RUN NO. 7
CABLE GROUP II REF	J1-177				J1-179	
	J1-179				J1-181	
	J1-181				J1-183	
	J1-183				J1-185	
	J1-185				J1-187	
	J1-197				J1-189	
	J1-189				J1-191	
	J1-191				J1-193	
	J1-193				J1-195	
	J1-195				J1-197	
	J1-197				J1-199	
	J1-199				J1-201	
	J1-201				J1-242	
	J1-242				J1-240	
	J1-240				J1-238	
	J1-238				J1-236	
	J1-236				J1-234	
	J1-234				J1-232	
	J1-232				J1-230	
	J1-230				J1-228	
	J1-228				J1-226	
	J1-226				J1-224	
	J1-224				J1-222	
	J -222				J1-220	
	J1-220				J1-218	
	J1-218				J1-216	
	J1-216	WHT	26	19	J1-208	ALSO RUN NO. 6

1003540		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

QTY REQD
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1003478A

SHEET 3

1003478 A

REVISIONS	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 12312 DR CHK		

Y INFORMATION CHART

DESCRIPTION			TO	
LOR	AWG	FIND NO.	RUN NO.	REMARKS
HT	26	19	67	
			40	
			72	
			47	
			75	
			66	
			80	
			13	
			83	
			[illegible]	
			97	
			55	
			102	
			26	
			105	
			63	
			109	
			30	
			112	
			46	
			124	
			36	
			129	
			54	
			131	
			62	
			144	
			23	
			146	
			38	
			148	
			3	
			151	
			6	
			152	
			7	
			153	
			28	
			156	
			11	
			159	
			8	
			166	
			53	
			177	
			37	
			181	
			184	
			19	
			186	
			56	
			188	
			15	
			192	
			61	
			194	
			24	
			198	
			58	
			202	
			208	
			29	
			214	
			45	
			228	
			49	
			157	
			143	
			161	
T	26	19	90	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
WIRE WRAP PER NOTE 10 J5 REF	162	WHT	30	20	91	
	163				92	
	164				78	
	165				96	
	167				141	
	168				128	
	170				107	
	171				108	
	172				121	
	173				136	
	174				120	
WIRE WRAP PER NOTE 10 J6 REF	175				119	
	176				122	
	178				79	
	180				85	
	182				93	
	183				111	
WIRE WRAP PER NOTE 10 J7 REF	190				115	
	191				100	
	195				116	
	196				98	
SEE NOTE 10.3 REF	199				132	
WIRE WRAP PER NOTE 10 J9 REF	201				142	
	203				156	
WIRE WRAP PER NOTE 10 J5 REF	204				149	
	205				125	
	206				82	
	207				101	
	209				135	
	210				86	
	211				137	
	213				94	
	215				118	
	216				117	
	217				68	
	218				95	
	219				138	
	220				104	
	221				127	
	222				134	
	223				139	
WIRE WRAP PER NOTE 10 J7 REF	224				74	
	225				114	
	226				70	
	229				123	
	231				88	
	232				87	
	233				140	
	234				71	
	235	WHT	30	20	89	

CONNECTOR JUMPER LIST

		DESCRIPTION				
REMARKS	FROM	COLOR	AWG	FIND NO.	TO	REMARKS
CABLE GROUP III REF	J1-21	WHT	26	19	J1-19	
	J1-19				J1-17	
	J1-17				J1-15	
	J1-15				J1-13	
	J1-13				J1-11	
	J1-11				J1-9	
	J1-9				J1-7	
	J1-7				J1-5	
	J1-5				J1-3	ALSO RUN NO. 7
CABLE GROUP II REF	J1-177				J1-179	
	J1-179				J1-181	
	J1-181				J1-183	
	J1-183				J1-185	
	J1-185				J1-187	
	J1-187				J1-189	
	J1-189				J1-191	
	J1-191				J1-193	
	J1-193				J1-195	
	J1-195				J1-197	
	J1-197				J1-199	
	J1-199				J1-201	
	J1-201				J1-242	
	J1-242				J1-240	
	J1-240				J1-238	
	J1-238				J1-236	
	J1-236				J1-234	
	J1-234				J1-232	
	J1-232				J1-230	
	J1-230				J1-228	
	J1-228				J1-226	
	J1-226				J1-224	
	J1-224				J1-222	
	J1-222				J1-220	
	J1-220				J1-218	
	J1-218				J1-216	
	J1-216	WHT	26	19	J1-208	ALSO RUN NO. 6

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1003540	
NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
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HOUSTON, TEXAS

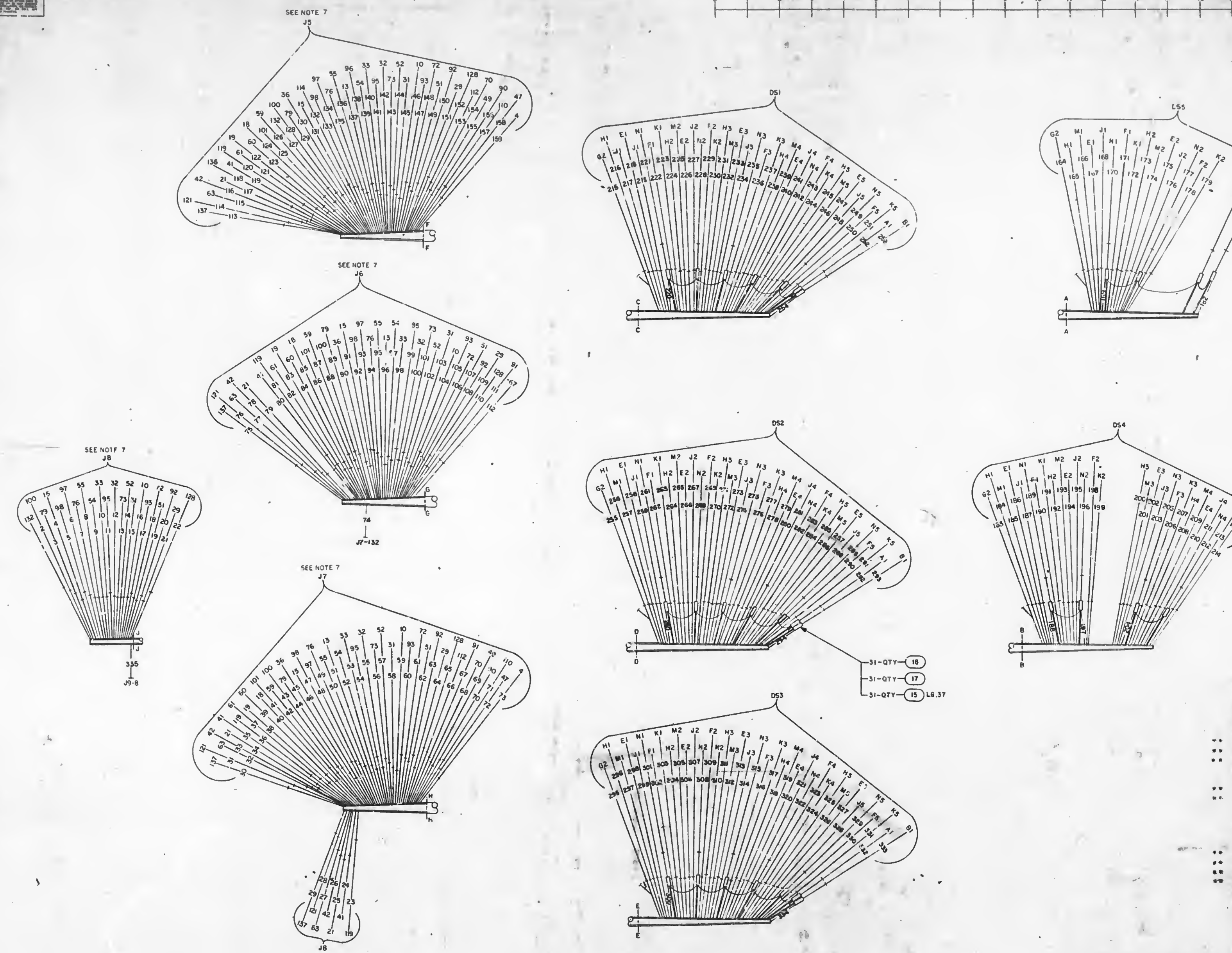
WIRING HARNESS, BRANCHED
AGC DSKY, MAIN

CODE IDENT NO. — SIZE J NASA DRAWING NO. 1003478
SCALE NONE WT SHEET 3 OF 4

1003478 A

03478 A SH 3 OF 4

Rev	Description	Date	Approval
A	REVISED PER TDRR [illegible]	[illegible]	[illegible]



2	MS35216-13	SCREW, PAN HD	25
1	1004392	PLATE, CABLE SUPPORT	24
2	MS15795-303	WASHER, FLAT	23
1	1003630	BRARKET, CABLE SUPPORT	22
85	1006737-A3	WIRE, ELECTRICAL SHLD AWG 30	21
300	1006737-A2	WIRE, ELECTRICAL SOLID AWG 30	20
200	1006737-A1	WIRE, ELECTRICAL SOLID AWG 26	19
31	1000243-1	FERRULE, ELECTRICAL CONDUCTOR	18
31	1000242-1	FERRULE, ELECTRICAL CONDUCTOR	17
1.5	SEE NOTE 2&7	SLEEVING	16
1.5	SEE NOTE 2	SLEEVING	15
5	1004546-1	WASHER, FLAT	14
5	1004546-2	WASHER, FLAT	13
5	1004579-2	SCREW, JACKING	12
5	MS16633-4015	RING, RETAINING	11
2	MS18035-1	STRAP CABLE ID	10
.125	SEE NOTE 3	SLEEVING	9
.88	SEE NOTE 2	SLEEVING	8
.33	SEE NOTE 2	SLEEVING	7
.09	SEE NOTE 2	SLEEVING	6
244	1010738-1	CONTACT (MALE)	5
1	1006268-1	CONNECTOR, PLUG	4
1	1003542	GASKET & FRAME ASSY	3
1	1003547	CONN PL, WIRE WRAP ASSY (DECODING)	2
1	1003479	CONN PL, WIRE WRAP ASSY (RELAY)	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1003540	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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CHECKED [illegible] 29 Jul 64
APPROVAL [illegible]
APPROVAL
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
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AGC DSKY, MAIN.

CODE IDENT NO. —— SIZE J NASA DRAWING NO 1003478
SCALE 1/1 WT SHEET 4 OF 4

1003478 A SH 4 OF 4

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 14649 DR CHK		
B	REVISED PER TDRR 15105 DR CHK ARB	3/26/69	

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
J5-102	YELLOW	30	2	J5-83
J5-83	↑	↑	↑	J5-80
J5-80				J5-56
J5-56				J5-53
J5-53				J5-71
J5-71				J5-11
J5-11				J5-35
J5-35				J6 102
J6-102				J6-83
J6-83				J6-80
J6-80				J6-56
J6-56				J6-53
J6-53				J6-71
J6-71				J6-46
J6-46				J6-11
J6-11				J6-35
J6-35				J7-102
J7 102				J7-83
J7-83				J7-80
J7-80				J7-35
J7-35				J7-11
J7-11				J7-56
J7-56				J7-71
J7-71				J7-27
J7-27				J8-71
J8-71				J8-56
J8-56				J8-11
J8-11				J8-35
J8-35				J8-80
J8-80				J8-83
J8-83				J9-10
J5-46				J8-103
J8-105				J7-15
J7-16				J7-82
J7-82				J7-105
J7-105				J6-16
J6-16				J6-82
J6-82				J6-105
J6-105				J5-16
J5-16				J5-82
-82				J5-105
J5-105				J5-85
J7-68				J7-109
J7-109				J7-24
* J7-7				J7-68
* J5-104				J6-104
* J5-39				J6-39
* J5-58				J6-58
* J5-99				J6-99
* J5-62				J6-62
* J5-14				J6-14
* J5-38				J7-38
J7-38				J7-5
* J5-77				J7-77
J7-77				J8-9
* J5-12				J6-12
* J5-74				J6-74
* J5-30				J7-30
J7-30				J6-5
* J5-34				J6-34
J6-34				J7-34
J7-34				J8-34
* J5-75				J6-75
J6-75				J7-75
J7-75				J8-75
* J5-50				J6-50
* J5-8				J6-8
* J5-5				J5-45
J5-45				J7-45
* J6-91				J6-96
* J5-96				J5-91
* J5-65				J6-125
J6-125				J6-69
J6-69	↓	↓	↓	J6-66
J6-66	YELLOW	30	2	J6-25

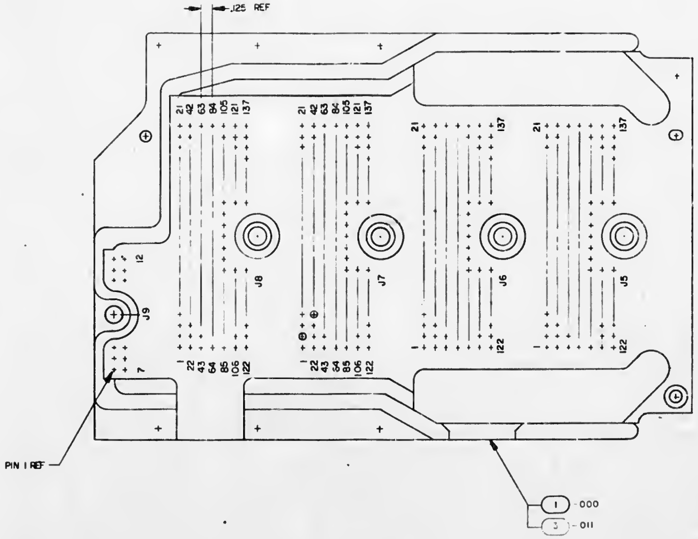
* INDICATES WIREWRAP MUST BE ON FIRST LEVEL

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
J6-25	YELLOW	30	2	J6-2
J6-2	↑	↑	↑	J8-125
J8-125				J8-69
J8-69				J8-66
J8-66				J8-25
J8-25				J8-2
*J5-20				J7-20
J7-20				J7-9
*J5-26				J6-9
J6-9				J7-26
*J5-106				J6-122
J6-122				J7-106
*J7-127				J7-89
J7-89				J7-23
J7-23				J8-105
*J5-86				J6-124
J6-124				J6-109
J6-109				J6-68
J6-68				J6-24
J6-24				J6-7
J6-7				J8-124
J8-124				J8-109
J8-109				J8-68
J8-68				J8-24
J8-24				J8-7
*J5-9				J6-20
J6-20				J8-20
*J6-108				J6-38
J6-38				J8-38
*J6-77				J7-108
J7-108				J8-77
*J5-108				J6-30
J6-30				J8-30
*J6-26				J8-26
J8-26				J8-5
*J5-122				J6-106
J6-106				J8-106
*J5-136				J6-136
J6 136				J6-57
J6-57				J6-132
J6-132				J7-136
J7-136				J7-57
J7-57				J8-136
*J7-74				J8-74
*J7-13				J7-6
*J7-50				J8-50
*J7-8				J8-8
*J7-104				J8-104
*J5-134				J5-116
J5-116				J5-17
J5-17				J6-134
J6-134				J6-116
J6-116				J6-17
J6-17				J7-134
J7-134				J7-116
J7-116				J7-17
J7-17				J8-134
J8-134				J8-116
J8-116				J8-17
J8-17				J9-1
*J7-39				J8-39
*J7-58				J8-58
*J7-99				J8-99
*J7-14				J8-14
*J7-12				J8-12
*J5-114				J5-117
J5-117				J6-114
J6-114				J6-117
J6-117				J7-114
J7-114				J7-117
J7-117				J8-114
J8-114				J8-117
J8-117				J8-133
J8-133	↓	↓	↓	J9-2
*J7-62	YELLOW	30	2	J8-62

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
J5-94	YELLOW	30	2	J5-113
J7-94	↑	↑	↑	J7-113
J6-94				J8-94
J8-94				J8-40
J8-113				J8-81
* J7-28				J7-48
J7-48				J7-88
J7-88				J8-118
J8-118				J7-115
J7-115				J7-40
J7-40				J7-118
J7-118				J6-115
J6-115				J6-40
J6-40				J6-118
J6-118				J5-115
J5-115				J5-40
J5-40	↓	↓	↓	J5-118
J5-118	YELLOW	30	2	J5-87

NOTES

1. WIRE PER ND1002031
2. AR DENOTES AS REQUIRED
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
4. ROUTE WIRES PER 1004650
5. THE ORIGINAL CONFIGURATION IS IDENTIFIED BY THE DRAWING NUMBER AND A-000 SUFFIX.



QTY REQD	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
1		1004675	PLATE, RELAY MODULE	3
AR	AR	1006732-1	WIRE, ELECTRICAL	2
	1	1004584	PLATE, RELAY MODULE	1
011	000	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003483	
1003478	
APPLICATION	

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FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
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CAMBRIDGE, MASS.
DRAWN H Marty DATE
CHECKED 29 July 68
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 4/1/69

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CONNECTOR PLATE
WIRE WRAP ASSY, RELAY MODULE
AGC DSKY MAIN

CODE IDENT NO. —
SIZE E
NASA DRAWING NO. 1003479
SCALE NONE WT SHEET 1 OF

1003479 B

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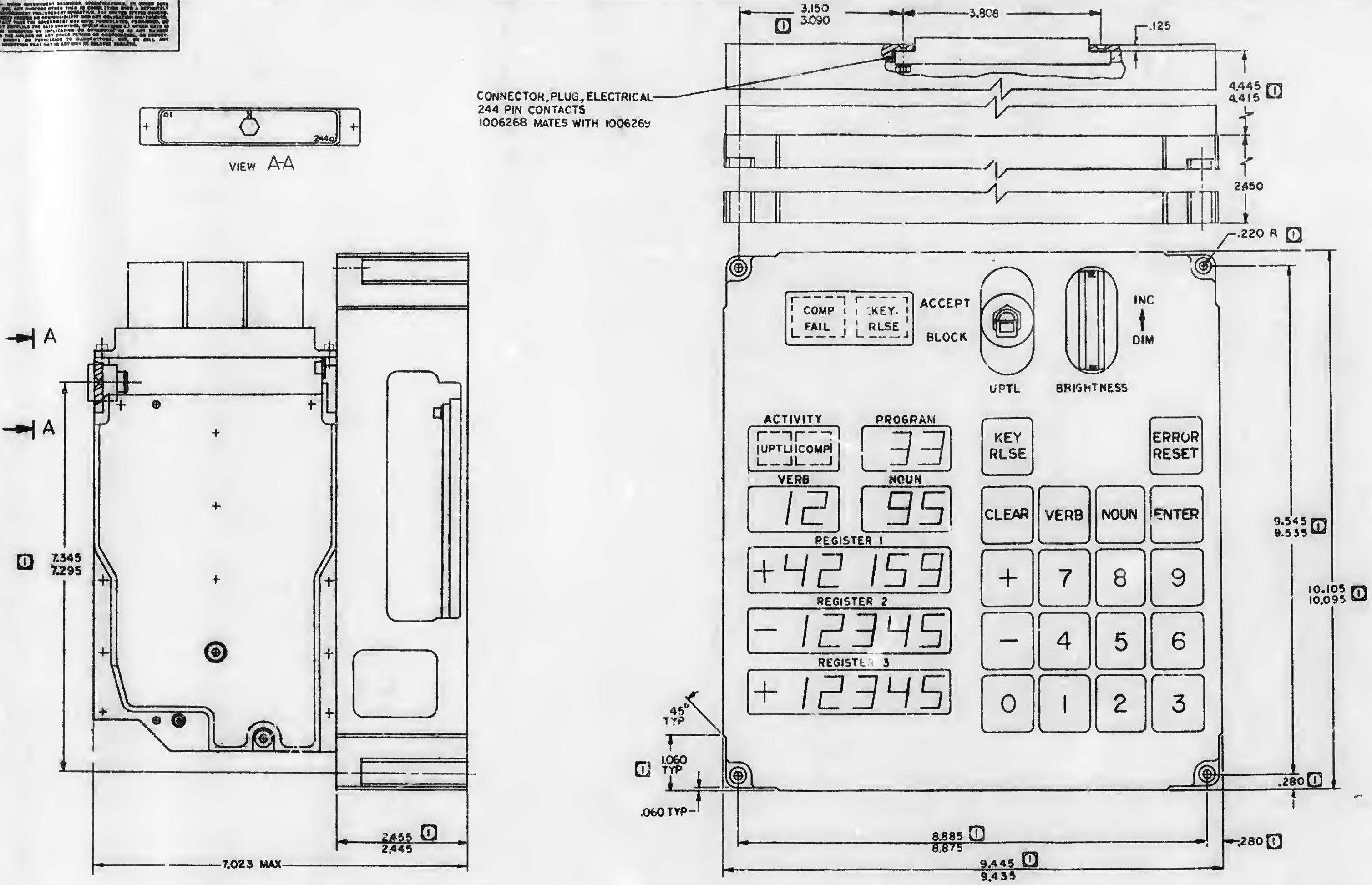
SYM	REVISIONS 10610 DESCRIPTION	DATE	APPROVAL



ALL DIMENSIONS ARE FOR REFERENCE ONLY

NOTES

1. DIMENSIONS SHOWN ARE CONTROLLED BY ICD MH01-01005-116
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
FINAL FINISH

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CAMBRIDGE, MASS.
DRAWN D. Mattig DATE 22 Jul 68
CHECKED J. G. Logan 29 July 68
APPROVAL [illegible] 14 Aug 68
APPROVAL E. J. [illegible] 9/1/68
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 9/11/68

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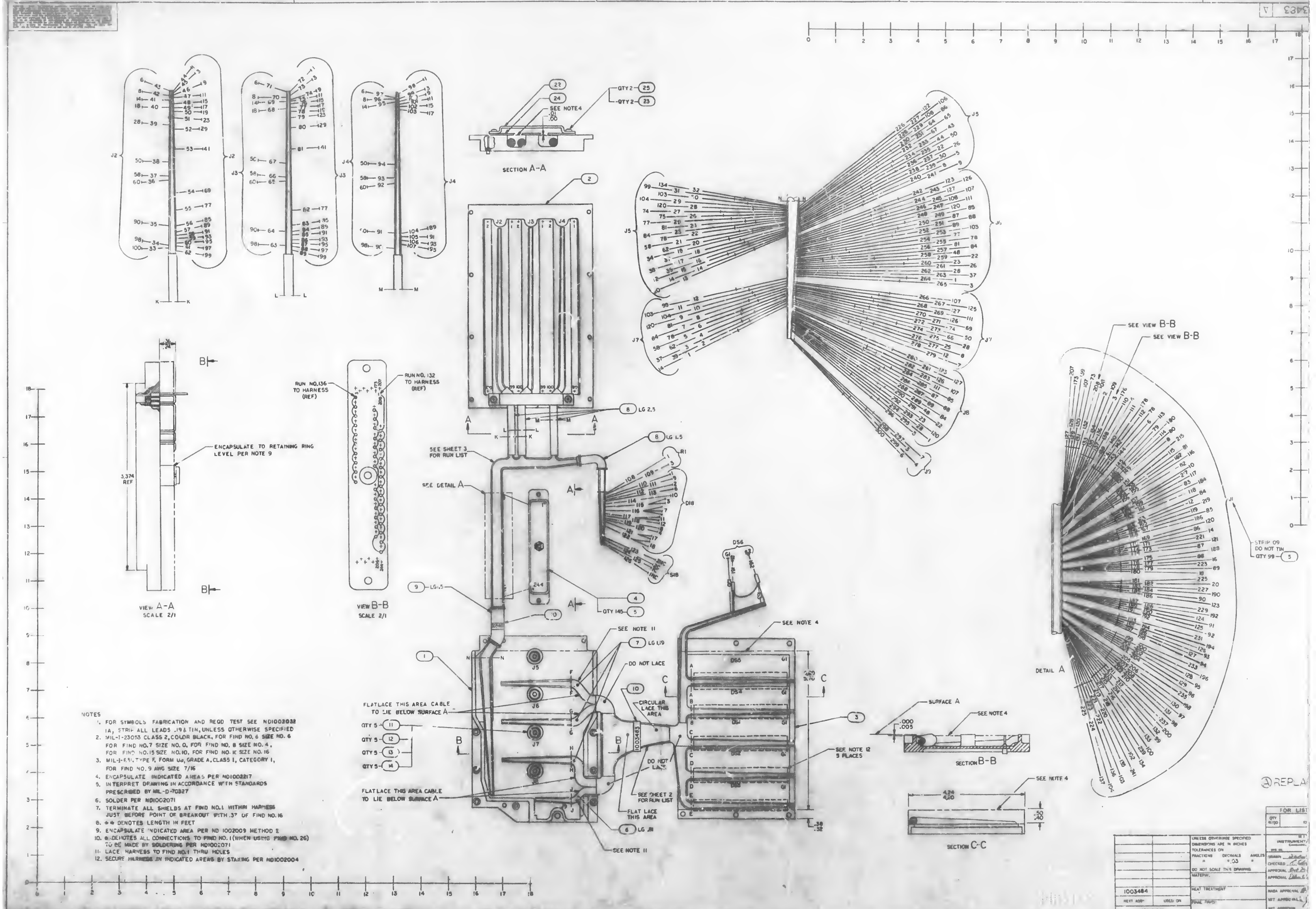
AGC DSKY PANEL, OUTLINE

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003-80
SCALE 1/1
WT
SHEET 1 OF 1



NOTES
1. FOR SYMBOLS FABRICATION AND REQD TEST SEE ND1002032 IA, STRIP ALL LEADS .19 & TIN, UNLESS OTHERWISE SPECIFIED
2. MIL-I-23053 CLASS 2, COLOR BLACK, FOR FIND NO. 6 SIZE NO. 6 FOR FIND NO. 7 SIZE NO. 0, FOR FIND NO. 8 SIZE NO. 4, FOR FIND NO. 15 SIZE NO. 10, FOR FIND NO. 16 SIZE NO. 16
3. MIL-I-631, TYPE F, FORM U, GRADE A, CLASS 1, CATEGORY 1, FOR FIND NO. 9 AWG SIZE 7/16
4. ENCAPSULATE INDICATED AREAS PER ND1002217
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
6. SOLDER PER ND1002071
7. TERMINATE ALL SHIELDS AT FIND NO. 1 WITHIN HARNESS JUST BEFORE POINT OF BREAKOUT WITH .37 OF FIND NO. 16
8. ** DENOTES LENGTH IN FEET
9. ENCAPSULATE INDICATED AREA PER ND 1002009 METHOD 2
10. ⊗ DENOTES ALL CONNECTIONS TO FIND NO. 1 (WHEN USING FIND NO. 26) TO BE MADE BY SOLDERING PER ND1002071
11. LACE HARNESS TO FIND NO. 1 THRU HOLES
12. SECURE HARNESS IN INDICATED AREAS BY STAKING PER ND1002004

1003484		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.03 ANGLES ± DO NOT SCALE THIS DRAWING	INSTRUMENT DRAWN CHECKED APPROVAL APPROVAL
NEXT ASSY	USED ON	MATERIAL	
APPLICATION		HEAT TREATMENT	NASA APPROVAL
		FINAL FINISH	MIT APPROVAL MIT APPROVAL

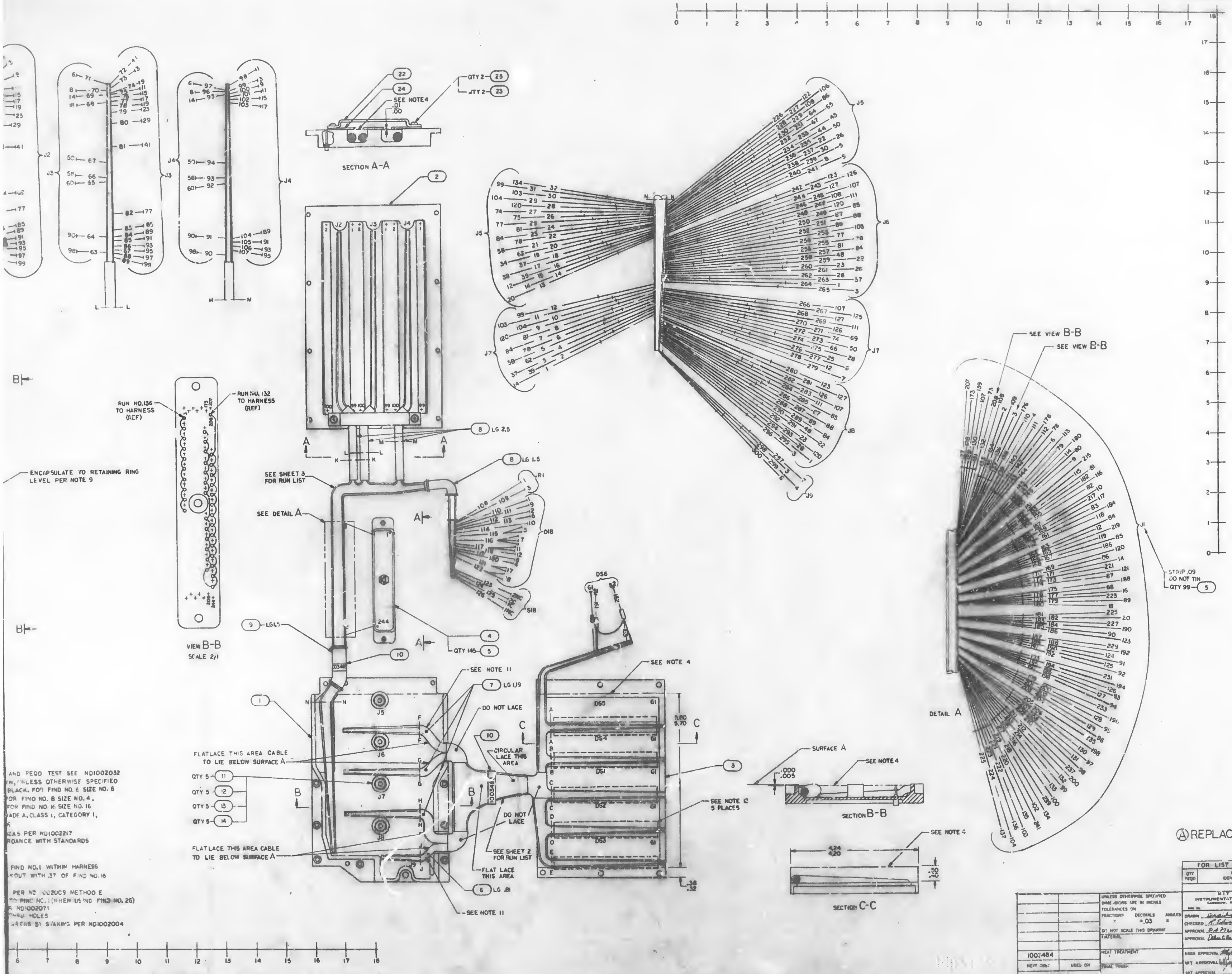
FOR LIST

QTY REQD

1003483 A

SHEET 1

SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV 8 PER TDRR 15125 DR *A.J. Bien* CHK *R.M.E.*	3/24/?	*Mi*



AND REQD TEST SEE ND1002032
IN, UNLESS OTHERWISE SPECIFIED
BLACK. FOR FIND NO. 6 SIZE NO. 6
FOR FIND NO. 8 SIZE NO. 4.
FOR FIND NO. 16 SIZE NO. 16
RADE A, CLASS 1, CATEGORY 1,
6
EAS PER ND1002217
RDANCE WITH STANDARDS

FIND NO. 1 WITHIN HARNESS
KOUT WITH .37 OF FIND NO. 16

PER ND 1002009 METHOD E
TO FIND NO. 1 (WHEN USING FIND NO. 26)
R ND1002071
THRU HOLES
AREAS BY STAKING PER ND1002004

Ⓐ REPLACED WITH CHANGE BY REV B

FOR LIST OF MATERIALS SEE SHEET 4			
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

1003484		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB CAMBRIDGE, MASS
DRAWN *[illegible]* DATE *[illegible]*
CHECKED *R. Edmonds* *[illegible]*
APPROVAL *R.A. Nord* 1 Dec 64
APPROVAL *Eldon C Hall* 16 Dec 64
NASA APPROVAL *[illegible]*
MIT APPROVAL *[illegible]*
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, S.D. MAIN

CODE IDENT NO — SIZE J NASA DRAWING NO 1003483
SCALE 1/1 WT SHEET 1 OF 4

ASSEMBLY INFORMATION CHART

	FROM		DESCRIPTION			TO		
	DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION	
	J7-132	74	SHLD	28	21	161		*
*		162	↑	↑	↑	118	J5-136	
*		301				119	J5-41	
	J5-101	125				315		*
	J5-132	127				180		*
*		181				112	J6-67	
	J6-91	111				293		*
*		292				96	J6-13	
*		189				92	J6-98	
*		249				86	J6-101	
*		235				80	J6-41	
*		170				110	J6-128	
	J6-31	103				205		*
*		252				137	J5-13	
	J5-96	138				253		*
	J8-41	24				242		*
	J7-110	71				228		*
	J5-110	157				221		*
*		268				145	J5-31	
	J5-128	152				282		*
	J5-98	133				329		*
*		322				41	J7-101	
*		332				67	J7-91	
	J7-13	51				333		*
	J7-41	35				308		*
	J7-98	47				261		*
*		289				65	J7-128	
	J7-31	58				275		*
	J8-128	22				177		*
*		212	↓	↓	↓	15	J8-31	
*		196	SHLD	28	21	5	J8-98	
SEE NOTE 10 TYP ●	J5-119	120	WHT	28	26	303		
		317	↑	↑	↑	130	J5-36	●
●	J6-97	93				191		
●	J6-36	90				251		
●	J6-119	81				237		
●	J6-73	101				172		
		207				102	J6-52	●
		244				23	J8-119	●
		230				68	J7-70	●
		223				154	J5-70	●
●	J5-52	144				270		
		284				143	J5-73	●
		331				134	J5-97	●
●	J7-36	45				324		
		310				36	J7-119	●
		263				48	J7-97	●
●	J7-73	56				291		
		277				57	J7-52	●
		179				13	J8-73	●
●	J8-52	14				214		
●	J8-37	6				199		
		160				164		
		164				215		
		215				255		
		255				295		
		295				132	J5-114	●
●	J8-137	29				241		
		240				28	J8-121	●
●	J8-63	27				243		
		239				26	J8-42	●
●	J8-21	25				238		
		234				75	J6-137	●
●	J6-121	76				233		
		236				77	J6-63	●
●	J6-42	78				232		
		245				87	J6-59	●
●	J6-61	82				247		
		250				84	J6-60	●
●	J6-19	83				248		
		246				85	J6-18	●
●	J6-21	79				231		
		229				70	J7-90	●
●	J7-4	73				226		
		227				72	J7-47	●
●	J7-49	69				225		
		224				66	J7 112	●
●	J7-29	84				287		
		290	↓	↓	↓	62	J7-[illegible]	●
●	J7-92	63	WHT	28	26	288		

* SEE GROUND SHEATH CONNECTION CHART

ASSEMBLY INFORMATION CHART

	FROM		DESCRIPTION			TO		
	DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION	
		286	WHT	28	26	61	J7-72	● SEE NOTE 10 TYP
SEE NOTE 10 TYP ●	J7-93	80	↑	↑	↑	235		
		283				149	J5-51	●
●	J5-29	151				280		
		281				150	J5-92	●
●	J5-72	148				279		
		278				147	J5-93	●
●	J5-10	146				264		
		265				141	J5-95	●
●	J5-32	142				269		
		266				140	J5-33	●
●	J5-54	139				267		
		271				59	J7-10	●
●	J7-32	55				276		
		274				52	J7-54	●
●	J7-33	53				273		
		272				54	J7-95	●
●	J7-55	50				257		
		256				49	J7-76	●
●	J7-15	46				262		
		259				43	J7-100	●
●	J7-79	44				258		
		222				156	J5-90	●
●	J5-4	159				218		
		219				158	J5-47	●
●	J5-49	155				217		
		216				153	J5-112	●
●	J5-55	136				326		
		330				131	J5-15	●
●	J5-76	135				325		
		328				128	J5-100	●
●	J5-79	129				327		
		323				39	J7-60	●
●	J7-59	42				318		
		321				38	J7-19	●
●	J7-18	40				319		
		320				37	J7-61	●
●	J7-21	34				304		
		305				33	J7-42	●
●	J7-63	32				309		
		307				30	J7-137	●
●	J7-121	31				306		
		316				123	J5-60	●
●	J5-59	126				311		
		312				124	J5-18	●
●	J5-19	122				314		
		313				121	J5-61	●
●	J5-21	117				296		
		297				116	J5-42	●
●	J5-63	115				302		
		299				113	J5-137	●
	J5-121	114				298		
●	J6-29	109				167		
		165				105	J6-93	●
●	J6-92	108				168		
		166				106	J6-72	●
●	J6-51	107				171		
		173				17	J8-93	●
●	J8-72	18				174		
		175				21	J8-29	●
●	J8-92	20				176		
		178				19	J8-51	●
●	J8-10	16				208		
		213				12	J8-32	●
●	J8-54	9				211		
		210				10	J8-33	●
●	J8-95	11				209		
		206				100	J6-32	●
●	J6-10	104				200		
		201				99	J6-95	●
●	J6-33	98				202		
		203				97	J6-54	●
●	J6-55	95				185		
		184				94	J6-76	●
●	J6-15	91				190		
		186				89	J6-79	●
●	J6-100	88				187		
		192				7	J8-76	●
●	J8-55	8	↓	↓	↓	193		
		194	WHT	28	26	3	J8-79	●

ASSEMBLY INFORMATION CHART

	FROM		DESCRIPTION			TO		
	DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION	
SEE NOTE 10 TYP ●	J8-100	2	WHT	28	26	195		
		198	WHT	28	26	4	J8-15	●
		163	BLK	26	19	169		
		182	↑	↑	↑	220		
		254				260		
		294				300		
		334				335		
	J8-132	1				183		
		183	↓	↓	↓	188		
		197	BLK	26	19	204		

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
161	162	2	19
170	177	2	↑
177	180	3	
180	181	1.25	
189	196	2	
205	212	2	
221	228	2	
228	235	2	
235	242	2	
242	249	2	
249	252	1.50	
252	253	1	
261	268	2	
268	275	2	
275	282	2	
282	289	2	
289	292	1.50	
292	293	1	
301	308	2	
308	315	2	
315	322	2	
322	329	2	
329	332	1.50	
			↓
332	333	1	19

③REPLAC

QTY REQD

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
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MATERIAL

HEAT TREATMENT

FINAL FINISH

NEXT ASSY | USED ON

APPLICATION

INSTRUMENTATION

DRAWN
CHECKED
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APPROVAL
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MIT APPROVAL
MIT APPROVAL

	REVISIONS 13224		
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV B PER TDRR 15105 DR CHK	3/24/65	

SSEMBLY INFORMATION CHART

	DESCRIPTION			TO		
O.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION	
	SHLD	28	21	161		*
				118	J5-136	SEE NOTE 10 TYP
				119	J5-41	
				315		*
				180		*
				112	J6-67	
				293		*
				96	J6-13	
				92	J6-98	
				86	J6-101	
				80	J6-41	
				110	J6-128	
				205		*
				137	J5-13	
				253		*
				242		*
				228		*
				221		*
				145	J5-31	
				282		*
				329		*
				41	J7-101	
				67	J7-91	
				333		*
				308		*
				261		*
				65	J7-128	
				275		*
				177		*
				15	J8-31	
	SHLD	28	21	5	J8-98	
	WHT	28	26	303		
				130	J5 36	●
				191		
				251		
				237		
				172		
				102	J6-52	●
				23	J8-119	●
				68	J7-70	●
				154	J5-70	●
				270		
				143	J5-73	●
				134	J5-97	●
				324		
				36	J7-119	●
				48	J7-97	●
				291		
				57	J7-52	●
				13	J8-73	●
				214		
				199		
				164		
				215		
				255		
				295		
				132	J5-114	●
				241		
				28	J8-121	●
				243		
				26	J8-42	●
				238		
				75	J6-137	●
				233		
				77	J6-63	●
				232		
				87	J6-59	●
				247		
				84	J6-60	●
				248		
				85	J6-18	●
				231		
				70	J7-90	●
				226		
				72	J7-47	●
				223		
				66	J7 112	●
				287		
				62	J7-5	●
	WHT	28	26	288		

ECTION CHART

ASSEMBLY INFORMATION CHART

	FROM		DESCRIPTION			TO		
	DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION	
		286	WHT	28	26	61	J7-72	● SEE NOTE 10 TYP
●	J7-93	60				285		
		283				149	J5-51	●
●	J5-29	151				280		
		281				150	J5-92	●
●	J5-72	148				279		
		278				147	J5-93	●
●	J5-10	146				264		
		265				141	J5-95	●
●	J5-32	142				269		
		266				140	J5-33	●
●	J5-54	139				267		
		271				59	J7-10	●
●	J7-32	55				276		
		274				52	J7-54	●
●	J7-33	53				273		
		272				54	J7-95	●
●	J7-55	50				257		
		256				49	J7-76	●
●	J7-15	46				262		
		259				43	J7-100	●
●	J7-79	44				258		
		222				156	J5-90	●
●	J5-4	159				218		
		219				158	J5-47	●
●	J5-49	155				217		
		216				153	J5-112	●
●	J5-55	136				326		
		330				131	J5-15	●
●	J5-76	135				325		
		328				128	J5-100	●
●	J5-79	129				327		
		323				39	J7-60	●
●	J7-59	42				318		
		321				38	J7-19	●
●	J7-18	40				319		
		320				37	J7-61	●
●	J7-21	34				304		
		305				33	J7-42	●
●	J7-63	32				309		
		307				30	J7-137	●
●	J7-121	31				306		
		316				123	J5-60	●
●	J5-59	126				311		
		312				124	J5-18	●
●	J5-19	122				314		
		313				121	J5-61	●
●	J5-21	117				296		
		297				116	J5-42	●
●	J5-63	115				302		
		299				113	J5-137	●
●	J5-121	114				298		
●	J6-29	109				167		
		165				105	J6-93	●
●	J6-92	108				168		
		166				106	J6-72	●
●	J6-51	107				171		
		173				17	J8-93	●
●	J8-72	18				174		
		175				21	J8-29	●
●	J8-92	20				176		
		178				19	J8-51	●
●	J8-10	16				208		
		213				12	J8-32	●
●	J8-54	9				211		
		210				10	J8-33	●
●	J8-95	11				209		
		206				100	J6-32	●
●	J6-10	104				200		
		201				99	J6-95	●
●	J6-33	98				202		
		203				97	J6-54	●
●	J6-55	95				185		
		184				94	J6-76	●
●	J6-15	91				190		
		186				89	J6-79	●
●	J6-100	88				187		
		192				7	J8-76	●
●	J8-55	8				193		
		194	WHT	28	26	3	J8-79	●

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO		
DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION	
J8-100	2	WHT	28	26	195		
	198	WHT	28	26	4	J8-15	●
	163	BLK	26	19	169		
	182				220		
	254				260		
	294				300		
	334				335		
J8-132	1				183		
	183				188		
	197	BLK	26	19	204		

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
161	162	2	19
170	177	2	
177	180	3	
180	181	1.25	
189	196	2	
205	212	2	
221	228	2	
228	235	2	
235	242	2	
242	249	2	
249	252	1.50	
252	253	1	
261	268	2	
268	275	2	
275	282	2	
282	289	2	
289	292	1.50	
292	293	1	
301	308	2	
308	315	2	
315	322	2	
322	329	2	
329	332	1.50	
332	333	1	19

Ⓐ REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY | USED ON
APPLICATION

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, S.D. MAIN

CODE IDENT NO. —— | SIZE J | NASA DRAWING NO. 1003483
SCALE NONE | WT | SHEET 2 OF 4

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION
J1-235	205	WHT	26	20	44	J2-1
J2-9	46				181	J1-225
J1-227	183				49	J2-17
J2-19	50				187	J1-229
J1-176	137				52	J1-29
J2-29	53				220	J1-241
J1-180	147				57	J2-89
J2-91	58				141	J1-178
J1-182	154				60	J2-95
J2-97	61				161	J1-184
J1-221	193				72	J3-1
J3-9	74				199	J1-233
J1-215	151				77	J3-17
J3-19	78				158	J1-217
J1-239	217				80	J3-29
J3-41	81				211	J1-237
J1-188	175				84	J3-89
J3-91	85				168	J1-186
J1-190	184				87	J3-95
J3-97	88				188	J1-192
J1-219	165				98	J4-1
J4-9	100				172	J1-221
J1-223	178				103	J4-17
J4-89	104				200	J1-198
J1-154	194				105	J4-91
J4-95	107				212	J1-200
J1-16	177				110	
	111				164	J1-12
J1-6	144				112	
	113				180	J1-18
J1-10	157				114	
J1-8	150				118	
	120				171	J1-14
J1-139	129				121	
	123				143	J1-78
J1-79	146				134	
	125				139	J1-4
J1-20	182				231	J5-65
J5-22	216				202	J1-95
J1-88	176				248	J6-120
J6-81	256				179	J1-89
J1-90	185				255	J6-78
J1-98	210				266	J7-107
J7-125	267				156	J1-82
J1-100	216				268	J7-127
J7-111	269				204	J1-96
J1-97	208				270	J7-126
J7-69	271				149	J1-80
J1-83	160				274	J7-66
J7-28	275				214	J1-99
J1-81	153				276	J7-25
J7-7	279				163	J1-84
J1-94	198				293	J8-120
J9-7	297				206	J1-198
J1-73	131				299	J9-4
J1-85	167				28	J5-120
J5-81	24				170	J1-86
J1-87	174				22	J5-78
J7-120	9				190	J1-91
J1-92	192				8	J7-81
J7-78	6				186	J1-93
J2-69	54				122	
	122				109	
	119				126	
J5-64	230				224	J1-104
J5-43	233				222	J1-103
J5-44	234				219	J1-102
J6-123	242				162	J1-118
J6-128	243				140	J1-111
J6-127	244				135	J1-109
J6-107	245				148	J1-114
J6-111	247				133	J1-108
J6-85	249				173	J1-121
J6-87	250				166	J1-119
J6-88	251				145	J1-113
J6-89	252				142	J1-112
J6-48	258				138	J1-110
J6-22	259	WHT	26	20	169	J1-120

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION
J6-23	260	WHT	26	20	152	J1-115
J6-28	262				130	J1-107
J6-1	264				159	J1-117
J6-3	265				155	J1-116
J8-123	280				218	J1-134
J8-127	281				191	J1-125
J8-126	282				197	J1-127
J8-107	283				207	J1-130
J8-111	284				189	J1-124
J8-85	285				225	J1-137
J8-87	286				221	J1-135
J8-88	287				205	J1-129
J8-89	288				201	J1-128
J8-48	290				195	J1-126
J8-22	291				223	J1-136
J8-23	292				209	J1-131
J8-28	294				186	J1-123
J8-1	295				215	J1-133
J8-3	296	WHT	26	20	213	J1-132
J5-122	226	WHT	28	26	38	J2-50
J5-106	227				37	J2-58
J5-108	228				55	J2-77
J5-86	229				33	J2-100
J5-67	232				90	J4-98
J5-50	235				102	J4-15
J5-26	237				82	J3-77
J5-30	238				83	J3-85
J5-5	239				65	J3-60
J5-8	240				95	J4-14
J5-9	241				66	J3-58
J6-108	246				67	J3-50
J6-103	253				64	J3-90
J6-77	254				56	J2-85
J6-84	257				62	J2-99
J6-26	261				36	J2-60
J6-37	263				63	J3-99
J7-74	272				71	J3-6
J7-50	273				75	J3-11
J7-8	277				70	J3-8
J7-12	278				73	J3-3
J8-84	289				106	J4-93
J9-3	298				108	
J9-6	300				121	
J5-99	31				99	J4-3
J5-103	30				59	J2-93
J5-104	29				76	J3-15
J5-74	27				96	J4-8
J5-75	26				43	J2-6
J5-77	25				94	J4-50
J5-84	23				35	J2-90
J5-58	21				68	J3-18
J5-62	20				69	J3-14
J5-34	19				45	J2-3
J5-37	18				34	J2-98
J5-38	17				93	J4-58
J5-39	16				79	J3-23
J5-12	15				101	J4-11
J5-14	14				97	J4-6
J5-20	13				92	J4-60
J7-99	12				51	J2-23
J7-103	11				89	J3-99
J7-104	10				47	J2-11
J7-84	7				73	J3-98
J7-58	5				41	J2-14
J7-62	4				42	J2-8
J7-37	3				91	J4-90
J7-39	2				48	J2-15
J7-14	1	WHT	28	26	40	J2-18
	115	BLK	26	19	128	J1-173
J1-207	127				116	
	116				152	J1-208
	118				30	
J1-2	154				117	
	117				136	J1-3
J5-134	32	BLK	26	19	115	

CONNECTOR JUMPER LIST

		DESCRIPTION				
REMARKS	FROM	COLOR	AWG	FIND NO.	TO	REMARKS
CABLE GROUP III REF	J1-21	BLK	26	19	J1-19	
	J1-19				J1-17	
	J1-17				J1-15	
	J1-15				J1-13	
	J1-13				J1-11	
	J1-11				J1-9	
	J1-9				J1-7	
	J1-7				J1-5	
	J1-5				J1-3	ALSO RUN NO. 136
CABLE GROUP II REF	J1-177				J1-179	
	J1-179				J1-181	
	J1-181				J1-183	
	J1-183				J1-185	
	J1-185				J1-187	
	J1-187				J1-189	
	J1-189				J1-191	
	J1-191				J1-193	
	J1-193				J1-195	
	J1-195				J1-197	
	J1-197				J1-199	
	J1-199				J1-201	
	J1-201				J1-242	
	J1-242				J1-240	
	J1-240				J1-238	
	J1-238				J1-236	
	J1-236				J1-234	
	J1-234				J1-232	
	J1-232				J1-230	
	J1-230				J1-228	
	J1-228				J1-226	
	J1-226				J1-224	
	J1-224				J1-222	
	J1-222				J1-220	
	J1-220				J1-218	
	J1-218				J1-216	
	J1-216	BLK	26	19	J1-208	ALSO RUN NO. 132

Ⓐ RE

QTY REQD

NEXT ASSY	USED ON
APPLICATION	

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1003483 A

REVISIONS 13229			
SYM	DESCRIPTION	DATE	APPROVED
A	REPLACED WITH CHANGE BY REV B PER TDRR 15105 DR J.J. CHK	5/4/67	

BLY INFORMATION CHART

DESCRIPTION			TO	
LOR	AWG	FIND NO.	RUN NO.	DESTINATION
WHT	26	20	44	J2-1
			181	J1-225
			49	J2-17
			187	J1-229
			52	J1-29
			220	J1-24
			57	J2-89
			141	J1-178
			60	J2-95
			161	J1-184
			72	J3-1
			199	J1-233
			77	J3-17
			158	J1-217
			80	J3-29
			211	J1-237
			84	J3-89
			168	J1-186
			87	J3-95
			188	J1-192
			98	J4-1
			172	J1-271
			103	J4-17
			200	J1-196
			105	J4-91
			212	J1-200
			110	
			164	J1-12
			112	
			180	J1-18
			114	
			118	
			171	J1-14
			121	
			143	J1-78
			124	
			139	J1-4
			231	J3-65
			202	J1-95
			248	J6-120
			179	J1-89
			255	J6-78
			266	J7-107
			156	J1-82
			268	J7-127
			204	J1-96
			270	J7-126
			149	J1-80
			274	J7-66
			214	J1-99
			276	J7-25
			163	J1-84
			293	J8-120
			206	J1-198
			299	J9-4
			28	J5-120
			170	J1-86
			22	J5-78
			190	J1-91
			8	J7-81
			196	J1-93
			127	
			109	
			125	
			224	J1-104
			222	J1-103
			219	J1-102
			162	J1-118
			140	J1-111
			135	J1-109
			148	J1-114
			133	J1-108
			173	J1-121
			166	J1-119
			145	J1-113
			142	J1-112
			138	J1-110
	26	20	189	J1-120

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
DESTINATION	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	DESTINATION
J6-23	260	WHT	26	20	152	J1-115
J6-28	262				130	J1-107
J6-1	264				159	J1-117
J6-3	265				155	J1-116
J8-123	280				218	J1-134
J8-127	281				191	J1-125
J8-125	282				197	J1-127
J8-107	283				207	J1-130
J8-111	284				189	J1-124
J8-85	285				225	J1-137
J8-87	286				221	J1-135
J8-88	287				203	J1-129
J8-89	288				201	J1-128
J8-48	290				195	J1-126
J8-22	291				223	J1-136
J8-23	292				209	J1-131
J8-28	294				186	J1-123
J8-1	295				215	J1-133
J8-3	296	WHT	26	20	213	J1-132
J5-122	276	WHT	28	26	38	J2-50
J5-106	227				37	J2-58
J5-108	228				55	J2-77
J5-86	229				33	J2-100
J5-67	232				90	J4-98
J5-50	235				102	J4-15
J5-26	237				82	J3-77
J5-30	238				83	J3-85
J5-5	239				65	J3-60
J5-8	240				95	J4-14
J5-9	241				66	J3-58
J6-108	246				67	J3-50
J6-103	253				64	J3-90
J6-77	254				56	J2-85
J6-84	257				62	J2-99
J6-26	261				36	J2-60
J6-37	263				86	J3-99
J7-74	272				71	J3-6
J7-50	273				75	J3-11
J7-8	277				70	J3-8
J7-12	278				73	J3-3
J8-84	289				106	J4-93
J9-3	298				108	
J9-6	300				121	
J5-99	31				99	J4-3
J5-103	30				59	J2-93
J5-104	29				76	J3-15
J5-74	27				96	J4-8
J5-75	26				43	J2-6
J5-77	25				94	J4-50
J5-84	23				35	J2-90
J5-58	21				68	J3-18
J5-62	20				69	J3-14
J5-34	19				45	J2-3
J5-37	18				34	J2-98
J5-38	17				93	J4-58
J5-39	16				79	J3-23
J5-12	15				101	J4-11
J5-14	14				97	J4-6
J5-20	13				92	J4-60
J7-99	12				51	J2-23
J7-103	11				89	J3-99
J7-104	10				47	J2-11
J7-84	7				63	J3-96
J7-58	5				41	J2-14
J7-62	4				42	J2-8
J7-37	3				91	J4-90
J7-39	2				48	J2-15
J7-14	1	WHT	28	26	40	J2-18
	115	BLK	26	19	128	J1-173
J1-207	127				116	
	116				132	J1-208
	116				38	
J1-2	134				117	
	117				136	J1-3
J5-134	32	BLK	26	19	115	

CONNECTOR JUMPER LIST

		DESCRIPTION				
REMARKS	FROM	COLOR	AWG	FIND NO.	TO	REMARKS
CABLE GROUP III REF	J1-21	BLK	26	19	J1-19	
	J1-19				J1-17	
	J1-17				J1-15	
	J1-15				J1-13	
	J1-13				J1-11	
	J1-11				J1-9	
	J1-9				J1-7	
	J1-7				J1-5	
	J1-5				J1-3	ALSO RUN NO. 136
CABLE GROUP II REF	J1-177				J1-179	
	J1-179				J1-181	
	J1-181				J1-183	
	J1-183				J1-185	
	J1-185				J1-187	
	J1-187				J1-189	
	J1-189				J1-191	
	J1-191				J1-193	
	J1-193				J1-195	
	J1-195				J1-197	
	J1-197				J1-199	
	J1-199				J1-201	
	J1-201				J1-242	
	J1-242				J1-240	
	J1-240				J1-238	
	J1-238				J1-236	
	J1-236				J1-234	
	J1-234				J1-232	
	J1-232				J1-230	
	J1-230				J1-228	
	J1-228				J1-226	
	J1-226				J1-224	
	J1-224				J1-222	
	J1-222				J1-220	
	J1-220				J1-218	
	J1-218				J1-216	
	J1-216	BLK	26	19	J1-208	ALSO RUN NO. 132

Ⓐ REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

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AGC DSKY, SD. MAIN

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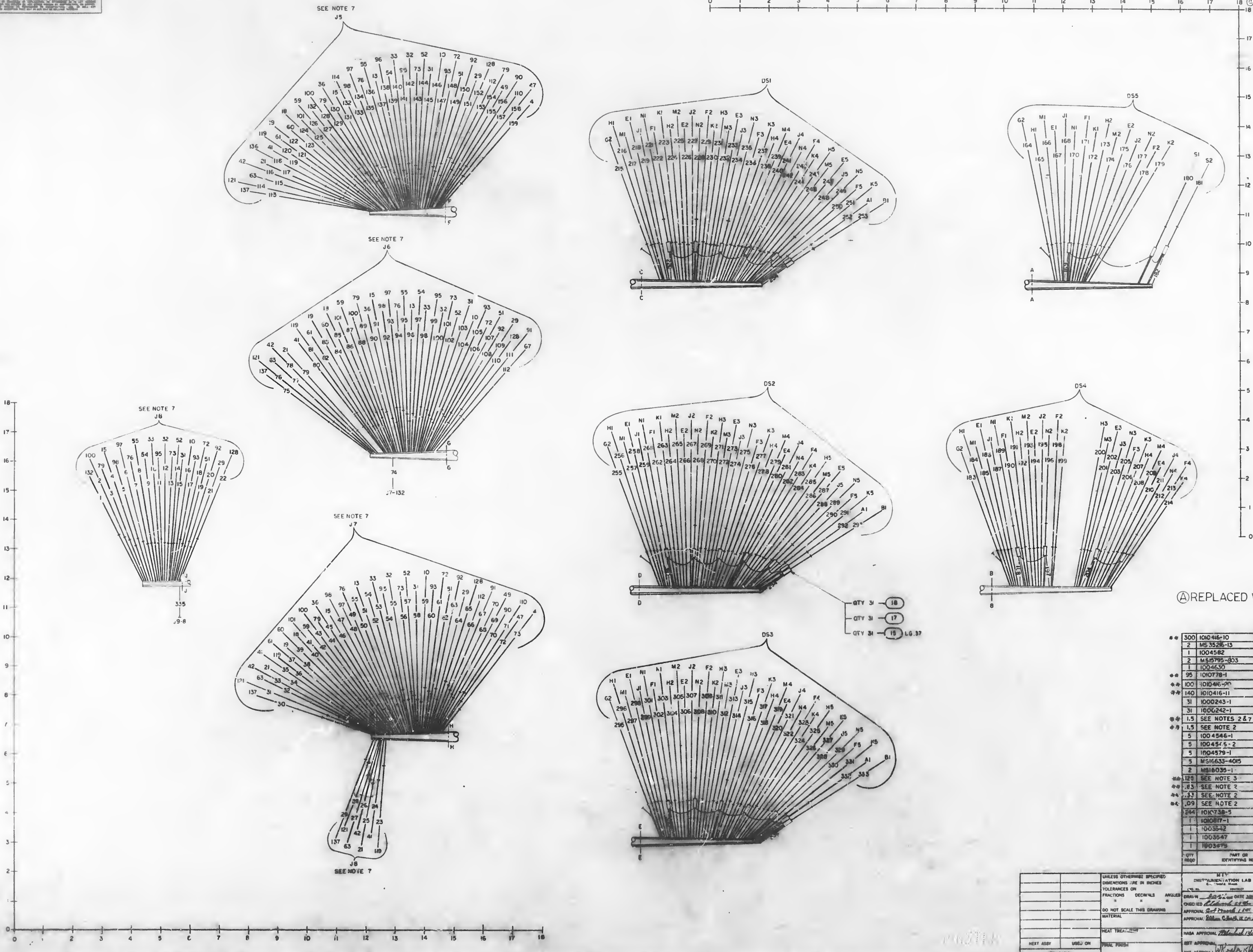
SYM	DESCRIPTION	DATE	APPROVAL
A	PEPLACED WITH CHANGE BY REV B PER TDRR 15105 DR CHK	3/24/65	

1003483 A



Ⓐ REPLACED WITH CHANGE BY REV B

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
**	300	1010416-10	WIRE, ELECTRICAL STRD AWG 28	26
	2	MS35216-13	SCREW, PAN HD	25
	1	1004582	PLATE, CABLE SUPPORT	24
	2	MS15795-803	WASHER, FLAT	23
	1	1004630	BRACKET, CABLE SUPPORT	22
**	95	1010778-1	WIRE, ELECTRICAL SHLD AWG 28	21
**	100	1010416-20	WIRE, ELECTRICAL STRD AWG 26	20
**	140	1010416-11	WIRE, ELECTRICAL STRD AWG 26	19
	31	1000243-1	FERRULE, ELECTRICAL CONDUCTOR	18
	31	1000242-1	FERRULE, ELECTRICAL CONDUCTOR	17
**	1.5	SEE NOTES 2 & 7	SLEEVING	16
**	1.5	SEE NOTE 2	SLEEVING	15
	5	1004546-1	WASHER, FLAT	14
	5	1004545-2	WASHER, FLAT	13
	5	1004579-1	SCREW, JACKING	12
	5	MS16633-4015	RING, RETAINING	11
	2	MS18035-1	STRAP CABLE ID	10
**	.125	SEE NOTE 3	SLEEVING	9
**	.83	SEE NOTE 2	SLEEVING	8
**	.33	SEE NOTE 2	SLEEVING	7
**	.09	SEE NOTE 2	SLEEVING	6
	244	1010738-5	CONTACT, PIN	5
	1	1010817-1	CONNECTOR, PLUG	4
	1	1003542	GASKET & FRAME ASSY	3
	1	1003547	CONN PL, WIRE WRAP ASSY (DECODING)	2
	1	1003479	CONN PL, WIRE WRAP ASSY (RELAY)	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

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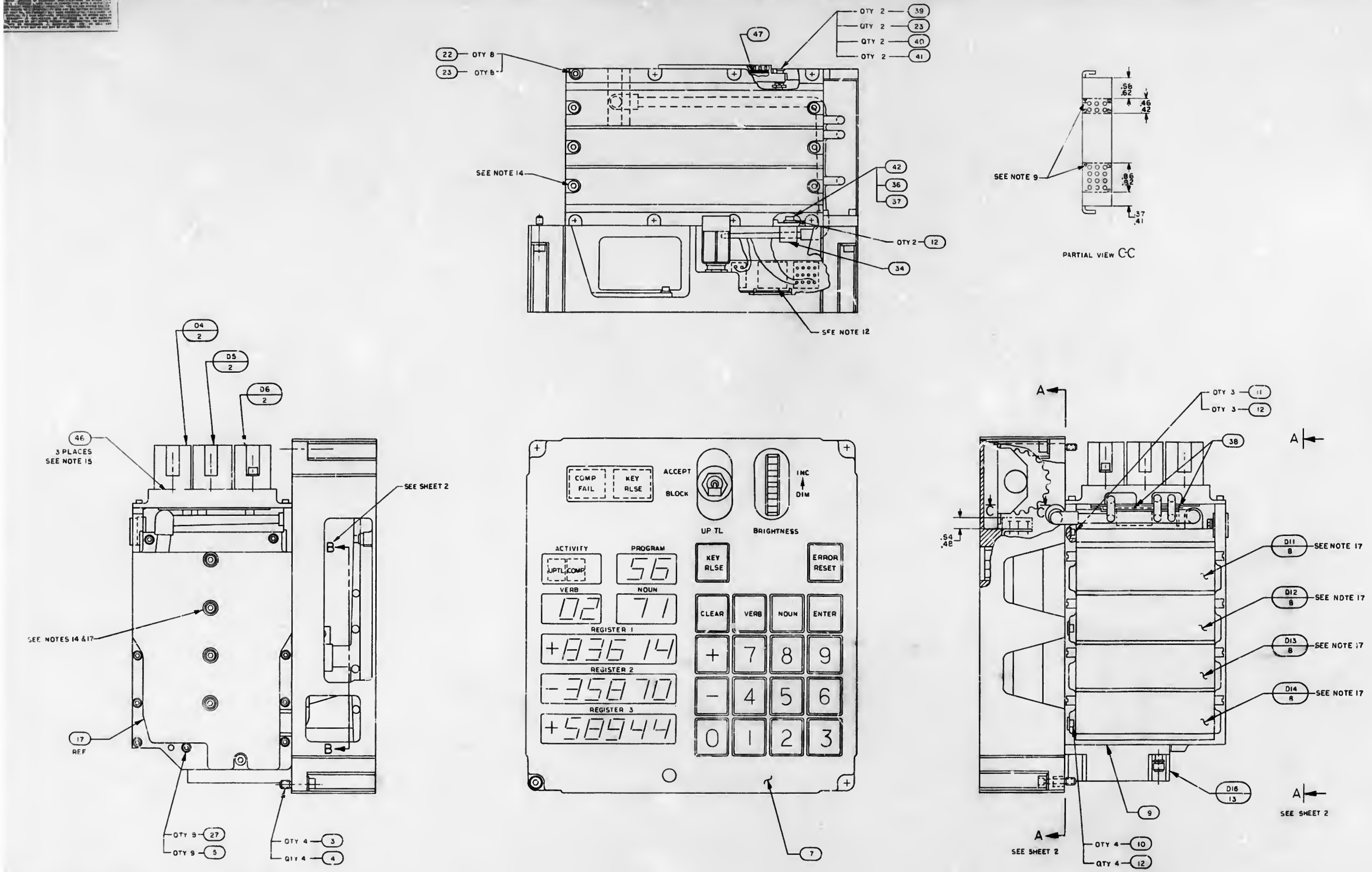
CODE IDENT NO. ——— SIZE J NASA DRAWING NO. 1003483
SCALE 1/1 WT SHEET 4 OF 4

1003483 A SH 4 OF 4

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TCHR 15104 DR G. J. Firos CHK R.H.S.	2/11/65	



NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2 SOLDER PER ND1002071
3 SERIALIZE PER ND1002023
4 MIL-I-631 TYPE F, FORM U a, GRADE a, CLASS I, CATEGORY I, AWG SIZE NO. 24
5. BOND FIND NO. 28 TO FIND NO. 16 PER ND1002004
6 MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I USING MARKING INK 1006271-1
7. * DENOTES LENGTH IN FEET
8 SECURE FIND NO. 33 USING MIL-S-22473, GRADE H
9 ENCAPSULATE PER ND10022[illegible]
10. MOUNTING TORQUE OF JACKING SCREWS (1004583) TO BE 3-4 IN. LBS
11. REMOVE LOCK WASHER FROM FIND NO. 19 ADJUST FIND NO. 19 TO ACHIEVE 2°-3° BACKOFF ON FIND NO. 19 BRIGHTNESS STOP
12. SECURE HARNESS IN INDICATED AREA BY STAKING PER ND1002004
13. FIND NO. 35 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 AND ASSOCIATED DASH NO.
14. MOUNTING TORQUE OF JACKING SCREWS (1004579) TO BE 15-19 IN. LBS
15. APPLY FIND NO. 46 TO MODULE MOUNTING SURFACE
16. * * QTY TO BE DETERMINED AT ASSY
17. INSTALL FIND NO. 8 AND FIND NO. 44 AS SHOWN. WITH FIND NO. 43 TIGHTENED, MEASURE GAP ON EACH SIDE, BETWEEN FIND NO 8 AND FIND NO. 9. LOOSEN FIND NO. 43 ON ONE SIDE ONLY. JACK OUT FIND NO. 8 AND INSTALL FIND NO. 45 OVER STOP PINS OF FIND NO. 8 AS REQUIRED SO THAT THE TOTAL THICKNESS OF FIND NO. 45 IS .001/.004 GREATER THAN MEASURED GAPS. JACK IN FIND NO. 8 AND TIGHTEN FIND NO. 43
18. MARK .187 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I, USING MARKING INK 1006271-1
19 MOUNTING TORQUE ON SCREWS A TO BE 3.5-4.5 IN LBS

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003770	
NEXT ASSY	USED ON
APPLICATION	

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APPROVAL [illegible] 15 DEC 64
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MIT APPROVAL [illegible]

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SIZE J
NASA DRAWING NO 1003484
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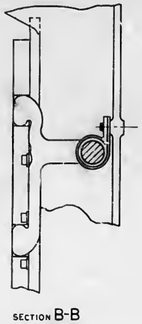
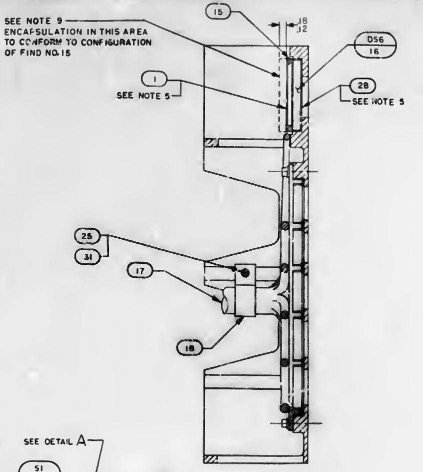
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 15104 DR CHK	2/11/65	

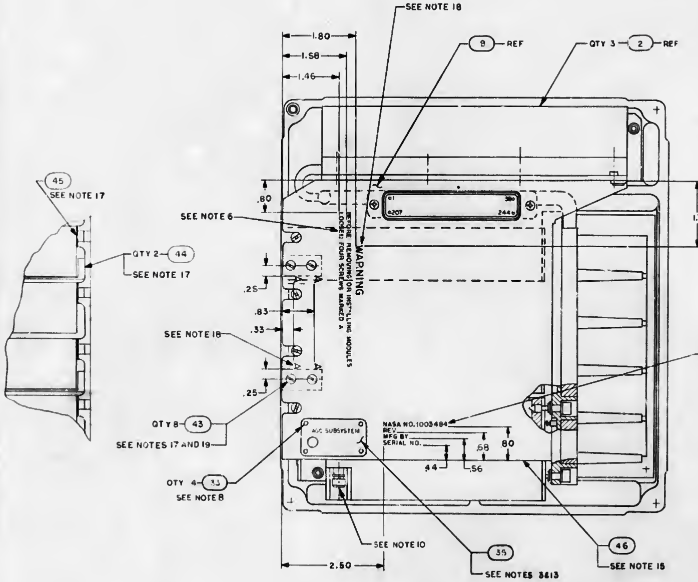
REVISIONS 13224



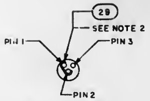
SECTION B-B
SEE SHEET 1



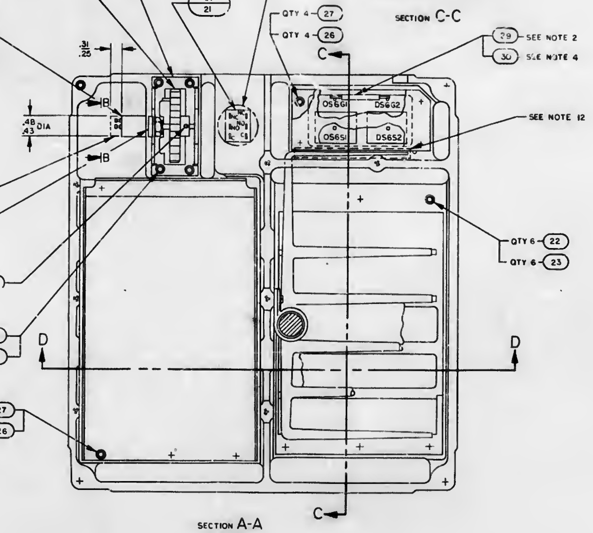
SECTION C-C



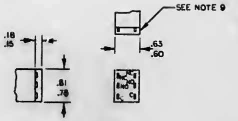
VIEW A-A
SEE SHEET 1



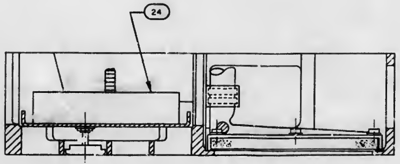
PARTIAL VIEW B-B



SECTION A-A
SEE SHEET 1



DETAIL A



SECTION D-D

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1003480	MAIN DSKY OUTLINE	REF
1	1010812-1	GASKET	47
AR	1006879	THERMOCONDUCTIVE COMPOUND	46
** AR	1004665	SHIM	45
2	1004666	STIFFNER	44
8	MS35233-13	SCREW, PAN HEAD	43
1	MS16995-19	SCREW, SOCKET HEAD	42
2	MS35337-78	WASHER, LOCK	41
2	MS35200-17	SCREW, FLAT HEAD	40
2	MS35649-44	NUT, PLAIN	39
* 1.5	1012507-003	LACING, CORD	38
1	MS35649-64	NUT, PLAIN	37
1	MS35338-79	WASHER, LOCK	36
1	1004628	PLATE, IDENT	35
1	MS25281-4	CLAMP, CABLE	34
4	MS16200-1	SCREW, PAN HEAD	33
2	MS51053-213	SCREW, SET	32
1	MS15795-807	WASHER, FLAT	31
AR	SEE NOTE 4	SLEEVING	30
AF	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	29
1	1004849	INSULATOR, FRONT	28
18	MS16995-10	SCREW, CAP, SOCKET HEAD	27
9	MS15795-804	WASHER, FLAT	26
1	MS35218-40	SCREW, PAN HEAD	25
1	1003549	KEYBOARD MODULE, D18	24
20	MS15795-803	WASHER, FLAT	23
18	MS16995-9	SCREW, CAP, SOCKET HEAD	22
1	1006820	SWITCH, TOGGLE	21
1	1004648	BRACKET, POT	20
1	1006736	RESISTOR, VARIABLE	19
1	MS25281-12	CLAMP, CABLE	18
1	1003483	WIRING HARNESS	17
1	1006814	INDICATOR, DIGITAL DISPLAY	16
1	1003543	GASKET & FRAME ASSY	15
1	1003473	THUMB WHEEL ASSY	14
1	1003532	POWER SUPPLY ASSY	13
9	MS15795-805	WASHER, FLAT	12
3	MS16995-17	SCREW, SOCKET HEAD	11
4	MS16995-16	SCREW, SOCKET HEAD	10
1	1004672-011	HOUSING, RELAY MODULE	9
4	1003098	RELAY MODULE ASSY	8
1	1004151	HOUSING, FRONT PANEL	7
1	1004644	WASHER, KNURLED	6
9	NAS620-4	WASHER, FLAT	5
4	MS15795-808	WASHER, FLAT	4
4	1004545	SCREW, CAPTIVE	3
3	1003530	COMPONENT ASSY	2
1	1004588	INSULATOR, INDICATOR DISPLAY	1

011 LIST OF MATERIALS

NEXT ASSY	USED ON

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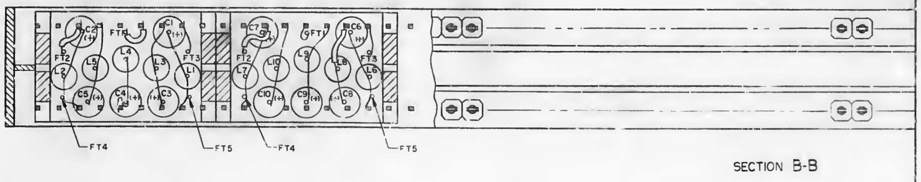
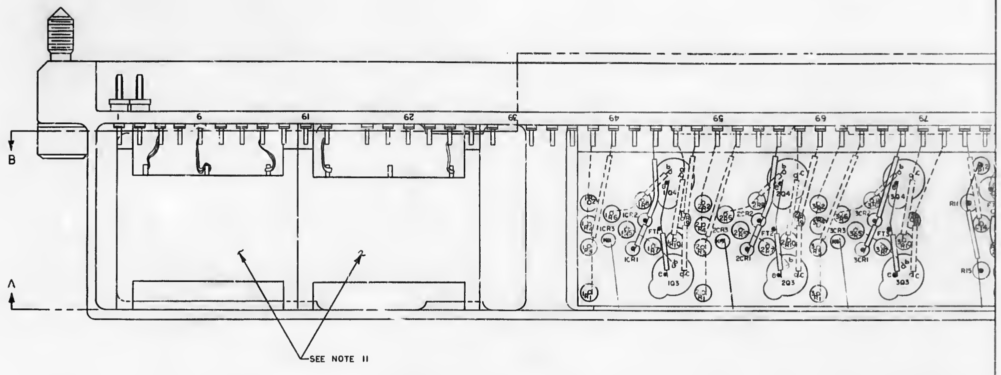
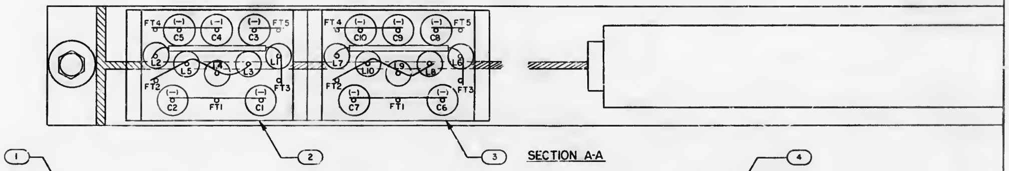
CODE IDENT NO. —— SIZE J NASA DRAWING NO. 1003484
SCALE 1/1 WT SHEET 2 OF 2

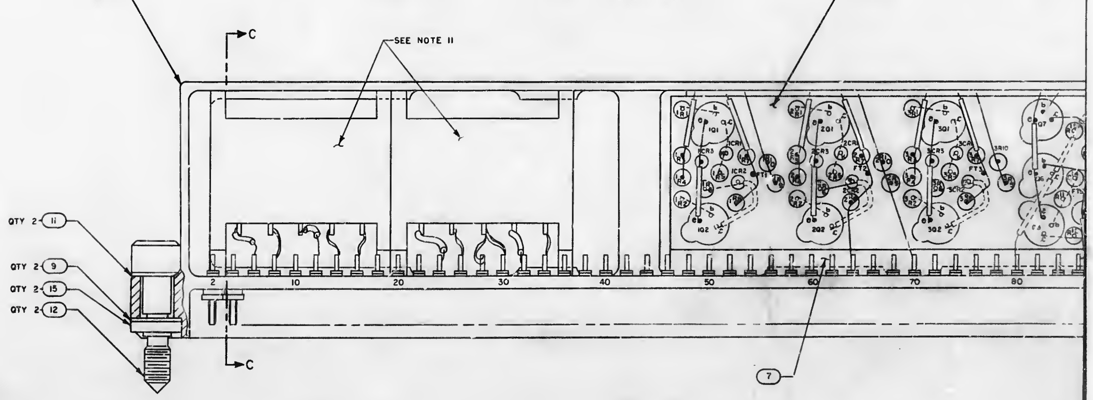


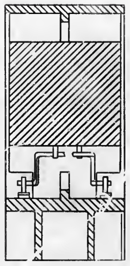
SECTION B-B





SECTION A-A





SECTION C-C

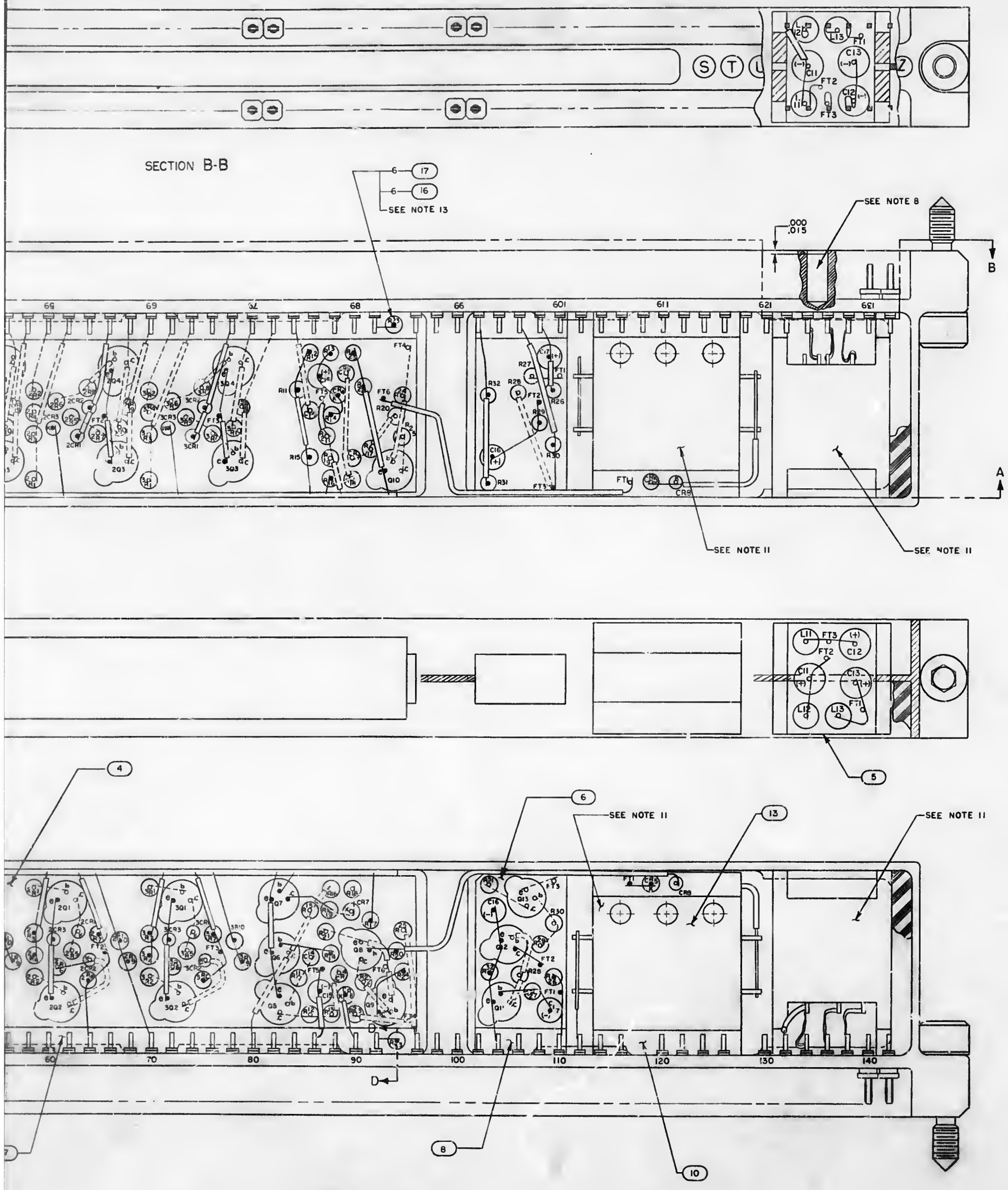
NOTES:

1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2 ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 & ND1002003
3 MARK $\substack{.08\\.10}$ HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2,SERIALIZE PER ND1002023 USING MARKING INK 1006271-1.
4 MARK $\substack{.24\\.26}$ HIGH WHITE PER ND1002019 AND ND1002122 TYPE II USING MARKING INK 1006271-1
5. ENCAPSULATE MODULE PER ND1002002 BLACK POLYURETHANE FOAM IN INDICATED AREAS ONLY
6 BOND FIND NO. 2,3,5 TO NO.1 PER ND1002004
7 BOND FIND NO. 7 TO FIND NOS. 1 AND 4 PER ND1002004
8 FILL KEYING HOLES MARKED AEGHUWXY USING THERMALLY CONDUCTIVE EPOXY RESIN PER ND1002183
9 BOND FIND NO.8 TO FIND NO.6 AND FIND NO.1 PER ND1002004
10. BOND FIND NO.10 TO FIND NO.13 AND FIND NO1 PER ND1002004
11. COAT INDICATED SURFACES WITH CLEAR EPOXY PER ND1002035 .005 THK MAX
12. SEAL TERMINALS & INSULATORS TO HEADER PER ND 1002004 TYPE VI
13. INSTALL FIND NO. 16 & 17 TO HEADE PER ND1002136 IN FOLLOWING PIN HOLES:
NO. 23, 39, 93, 94, 118, 128
14. SEAL HOLES PER ND1002004
15. AR DENOTES AS REQUIRED

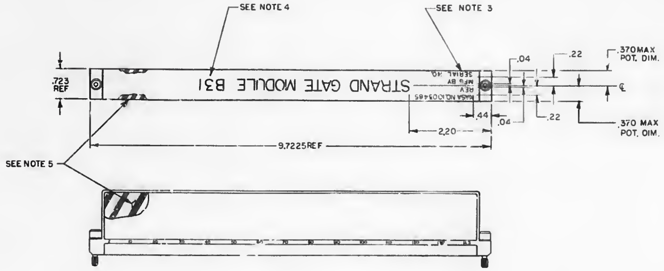
1003485	A	SHT 1 OF

1003485 | A

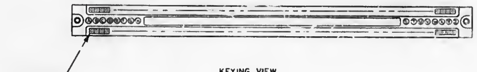
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 15121 DR Bucumbas CHK	2/12/65	


SECTION B-B

S T U Z
L12 L13 FT1 C13 C11 C12 FT2 FT3 L11
6 – 17
6 – 16
SEE NOTE 13
SEE NOTE 8
.000
.015
B
69 69 72 68 66 601 611 621 631
FT4 R27 R32 R28 FT2 FT6 R20 R29 R26 R11 R15 R30 R31 C16 Q10 FT3 FT1 CR8
2Q4 2CR6 2CR5 2CR1 2Q3 3Q4 3CR3 3CR1 3Q3
A
SEE NOTE 11
SEE NOTE 11
L11 FT3 C12 FT2 C11 C13 L12 L13 FT1
5
4
6
SEE NOTE 11
13
SEE NOTE 11
2Q1 2CR2 2Q2 3Q1 3CR2 3Q2 CR7 FT5 Q5 Q6 Q9 Q11 Q12 Q13 C16 R30 R28 FT1 FT2 FT3 CR8
60 70 80 90 100 110 120 130 140
D
8
10
7

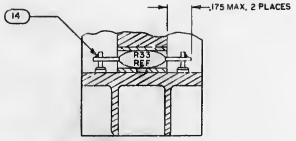


MARKING VIEW
SCALE 1/1



KEYING VIEW

Ⓞ REPLACES 1003470 WITH CHANGES



SECTION D-D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1006199	SCHEMATIC	REF
6	1006782-1	CONTACT, WRAPOST, MALE MINAT	17
6	1006775	INSULATOR, WRAPOST, MALE MINAT	16
2	MS16633-4015	RING, RETAINING, EXTERNAL "E"	15
AR	1005757-1	WIRE ELECTRICAL .010 x .020	14
1	1003492	STRAND GATE MODULE SUB ASSY 6	13
2	1004579-1	SCREW, JACKING	12
2	1004546-1	WASHER, FLAT	11
1	1004282	BLOCK SPACER	10
2	1004546-3	WASHER, FLAT	9
1	1004279	BLOCK SPACER	8
1	1003182	STRAND GATE BLOCK SPACER SUB-ASSY	7
1	1003475	STRAND GATE MODULE SUB ASSY 5	6
1	1003172	STRAND GATE MODULE SUB ASSY 4	5
1	1003486	STRAND GATE MODULE SUB ASSY 3	4
1	1003491	STRAND GATE MODULE SUB ASSY 2	3
1	1003490	STRAND GATE MODULE SUB ASSY 1	2
1	1003175	HEADER HOUSING ASSY	1

LIST OF MATERIALS

1003476	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE DEC 64
CHECKED A. Tosca 6 Jan 65
APPROVAL 7 Jan 65
APPROVAL Eldon C. Hall 8 Jan 65
NASA APPROVAL 1-13-65
MIT APPROVAL

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HOUSTON, TEXAS

STRAND GATE
MODULE ASSY B31

CODE IDENT NO —— SIZE J NASA DRAWING NO. 1003485
SCALE 4/1 WT SHEET 1 OF 1

1003485 | A | SHT 1 OF

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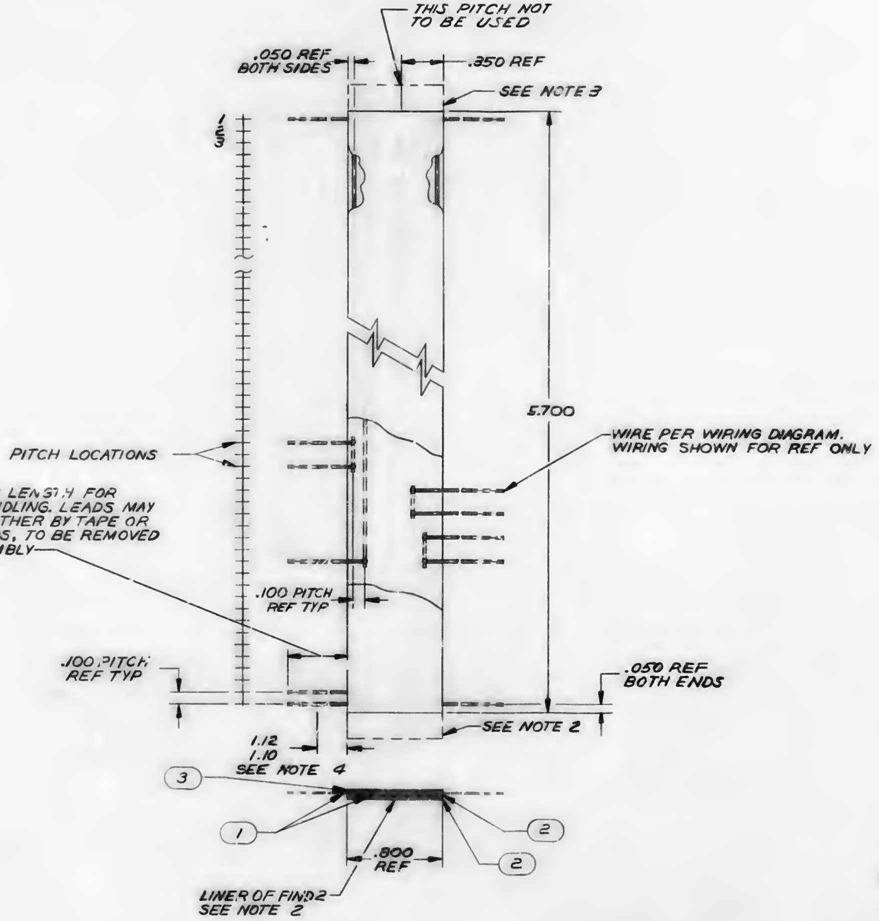
REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
—	CLASS A RELEASE PER TDRR 02918	9/5/63	
A	REVISED PER TDRR 05389		BPK
B	REVISED PER TDRR 08101 DR CHK R.H.E.		
C	REVISED PER TDRR 13259 DR CHK R.H.E. RTM	10/11/64	

MATRIX NO.	WIRING DIAGRAM	PART NO.	WIRING DIAGRAM REV SYMBOL
~~1~~	~~1006110~~	~~1003521-1~~	~~—~~
~~1~~	~~1006111~~	~~1003521-3~~	~~—~~
1	1006117	1003521-5	—
~~1~~	~~1006112~~	~~1003521-7~~	~~—~~
~~1~~	~~1006113~~	~~1003521-9~~	~~—~~
~~2~~	~~1006110~~	~~1003521-2~~	~~—~~
~~2~~	~~1006111~~	~~1003521-4~~	~~—~~
~~2~~	~~1006117~~	~~1003521-6~~	~~—~~
~~2~~	~~1006112~~	~~1003521-8~~	~~—~~
~~2~~	~~1006113~~	~~1003521-10~~	~~—~~
1	1006110	1003521-11	A
~~2~~	~~1006110~~	~~1003521-12~~	~~C~~
~~1~~	~~1006111~~	~~1003521-13~~	~~A~~
~~2~~	~~1006111~~	~~1003521-14~~	~~C~~
~~2~~	~~1006117~~	~~1003521-16~~	~~A~~
1	1006112	1003521-17	A
~~2~~	~~1006112~~	~~1003521-18~~	~~B~~
1	1006113	1003521-19	A
~~2~~	~~1006113~~	~~1003521-20~~	~~C~~
2	1006110	1003521-21	D
1	1006111	1003521-22	D
2	1006111	1003521-23	D
2	1006112	1003521-24	C
2	1006113	1003521-25	D
2	1006117	1003521-26	B


THIS PITCH NOT TO BE USED
.050 REF BOTH SIDES
.350 REF
SEE NOTE 3
1/3
5.700
WIRE PER WIRING DIAGRAM. WIRING SHOWN FOR REF ONLY
PITCH LOCATIONS
ALLOW EXCESS LENGTH FOR STORAGE & HANDLING. LEADS MAY BE HELD TOGETHER BY TAPE OR OTHER METHODS, TO BE REMOVED AT NEXT ASSEMBLY
.100 PITCH REF TYP
.100 PITCH REF TYP
.050 REF BOTH ENDS
SEE NOTE 2
1.12
1.10
SEE NOTE 4
3
1
2
2
.800 REF
LINER OF FIND 2 SEE NOTE 2

NOTES

1. * DENOTES LENGTH IN FEET
2. INDICATED EXCESS MATERIAL & LINERS OF FIND 2 ARE TO BE UTILIZED FOR HANDLING PURPOSES ONLY & WILL BE REMOVED AT NEXT ASSY
3. AR DENOTES AS REQUIRED
4. DENOTES DIM. FOR LEADS TO BE CUT AT NEXT ASSY
5. FABRICATE PER ND 1002030

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006826-4	INSULATION TAPE, ELECTRICAL	3
* 3.0	1006806-11	INSULATION TAPE, ELECTRICAL	2
AR	1006757-7	WIRE, ELECTRICAL .005X.020	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003098	

APPLICATION

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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DWG NO. CONTRACT

DRAWN C.S. Dracy DATE 63
CHECKED 17 July 63
APPROVAL
APPROVAL C Hall 5 Sept 63
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 9/5/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

800 MATRIX ASSEMBLY
AGC KEYBOARD AND DISPLAY

CODE IDENT NO. —— SIZE D NASA DRAWING NO 1003521
SCALE 2/1 WT SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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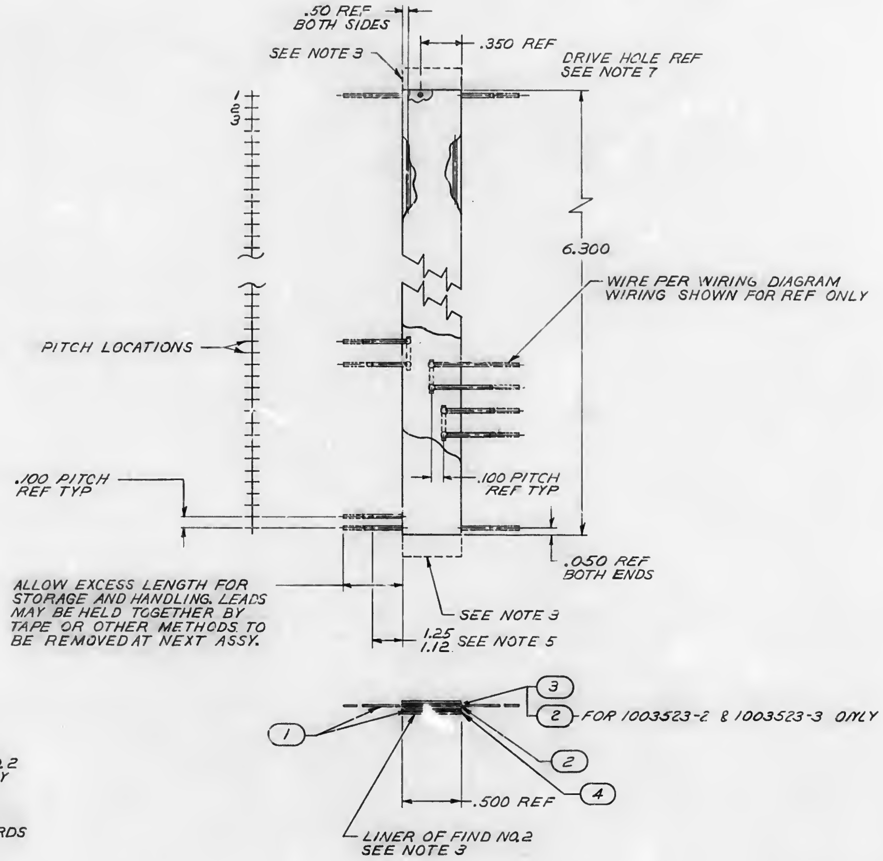
1003523

SYM	REVISIONS 0362/ DESCRIPTION	DATE	APPROVAL

	WIRING DIAGRAM	PART NO.	REVISION SYMBOL
MATRIX NO. 1	1003525	1003523-1	—
MATRIX NO. 2	1003525	1003523-2	—
MATRIX NO. 3	1003525	1003523-3	—



NOTES
1. USE ONLY FOR PART NO. 1003523-1
2. * DENOTES LENGTH IN FEET
3. INDICATED EXCESS MATERIAL AND LINERS OF FIND NO.2 ARE TO BE UTILIZED FOR HANDLING PURPOSES ONLY AND WILL BE REMOVED AT NEXT ASSY.
4. AR DENOTES AS REQUIRED
5. DENOTES DIM. FOR LEADS TO BE CUT AT NEXT ASSY.
6. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
7. FABRICATE PER ND1002030

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	AR	1006849-13	INSULATION TAPE, ELEC	4
SEE NOTE 1	AR	1006849-14	INSULATION TAPE, ELECTRICAL	3
*	3.0	1006806-4	INSULATION TAPE, ELECTRICAL	2
	AR	1006757-1	WIRE, ELECTRICAL .010 X .020	1

LIST OF MATERIALS

1003530	
NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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DRAWN DATE 31 JUL 63
CHECKED 25 AUG 63
APPROVAL 5 Sept 63
APPROVAL 3 OCT 63
NASA APPROVAL 10-3-63
MIT APPROVAL
MIT APPROVAL 3 Oct 63

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500 MATRIX ASSEMBLY
DECODING MODULE
AGC KEYBOARD

CODE IDENT NO. ——— SIZE D NASA DRAWING NO. 1003523
SCALE 2/1 WT SHEET 1 OF 1

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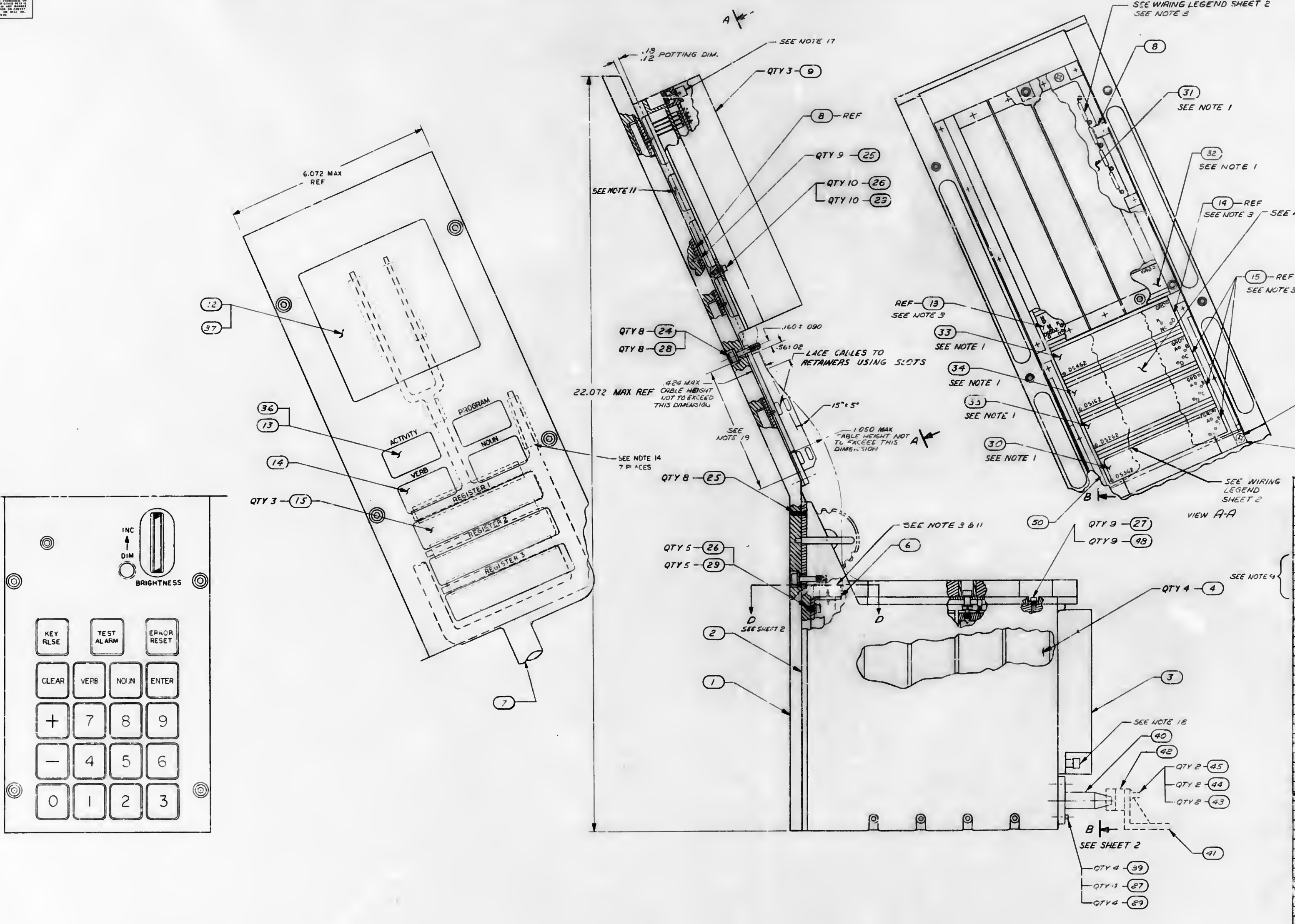
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 04770	11/7/62	[illegible]
B	REVISED PER TDRR 05192	[illegible] 63	[illegible]
C	REVISED PER TDRR 05563	1/7/64	[illegible]
D	REVISED PER TDRR 05768	[illegible]	[illegible]
E	REVISED PER TDRR 07063 DR R Wheeler CHK [illegible]	3/7/64	[illegible]
F	REVISED PER TDRR 07836 DR R W Bennett CHK [illegible]	4/1/64	[illegible]
G	REVISED PER TDRR 08410 DR E W Bennett CHK [illegible]	[illegible] 64	[illegible]
H	REVISED PER TDRR 10613 DR [illegible] CHK K.H.E.	[illegible]	[illegible]
J	REVISED PER TDRR 11372 DR P. Boudreau CHK K.H.E.	[illegible]	[illegible]
K	REVISED PER TDRR 12312 DR P Boudreau CHK [illegible]	10/6/64	[illegible]
L	REVISED PER TDRR 12316 DR R Zuilord CHK [illegible]	10/9/64	[illegible]
M	REVISED PER TDRR 12773 DR R Zuilord CHK [illegible]	11/12/64	[illegible]
N	REVISED PER TDRR 15119 DR A Alpha CHK [illegible]	[illegible]	[illegible]



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	[illegible]
☒	1003100	AGC DSKY NAV PANEL OUTLINE	REF
1	1004644	WASHER, KNURLED	52
4	MS35200-15	SCREW, FLAT HEAD	51
1	1004636	RETAINER, HOLD DOWN LH	50
1	1004635	RETAINER, HOLD DOWN RH	49
9	NAS 620-4	WASHER, FLAT	48
4	MS16200-1	SCREW, PAN HEAD	47
1	1004628	PLATE, IDENT	46
2	MS35337-80	WASHER, LOCK	45
2	MS15795-807	WASHER, FLAT	44
2	MS16995-26	SCREW, SOCKET HEAD	43
1	1004603	FLANGE	42
1	1004601	BRACKET, ANGLE	41
1	1003451	ALIGNMENT PIN ASSY	40
4	MS35337-78	WASHER, LOCK	39
*1.0	MIL-T-713	CORD, LACING	38
1	1004591	PHOTO MA FRONT, INDICATOR DISPLAY	37
1	1004590	PHOTO MA, FRONT, PROGRAM DISPLAY	36
1	1004128	PHOTO MA REGISTER NO. 2 DIS	35
1	1004126	PHOTO MA REGISTER NO. 1 DIS	34
1	1004148	PHOTO MASTER VERB-NOUN DIS	33
1	1004147	PHOTO MASTER PROGRAM DIS	32
1	1004149	PHOTO MASTER INDICATOR DIS	31
1	1004129	PHOTO MA, REGISTER NO. 3 DIS	30
25	MS15795-803	WASHER, FLAT	29
8	MS15795-808	WASHER, FLAT	28
9	MS16995-10	SCREW, SOCKET HD	27
25	MS16995-9	SCREW, SOCKET HD	26
17	MS35200-13	SCREW, FLAT HD	25
8	1004545	SCREW, CAPTIVE	24
2	MS51053-213	SCREW, SET	23
2	MS16633-4012	RING, RETAINING	22
2	1004119	CONNECTOR STUD	21
*3.0	1005737 A2	WIRE, ELECTRICAL	20
1	1003473	THUMB WHEEL ASSY	19
1	1006736	RESISTOR, VAR	18
1	1004648	BRACKET	17
☒	1006167	INTERCONNECTING DIAGRAM	REF
3	1006813	INDICATOR, DIGITAL DISPLAY	15
1	1006817	INDICATOR, DIGITAL DISPLAY	14
1	1006818	INDICATOR, DIGITAL DISPLAY	13
1	1006819	INDICATOR, DIGITAL DISPLAY	12
*.25	SEE NOTE 7	SLEEVING	11
*.50	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	10
3	1003530	DECODING MODULE ASSY	9
1	1003534	E/L HOLD DOWN ASSY	8
1	1003533	WIRING HARNESS	7
1	1003548	KEYBOARD MODULE ASSY	6
1	1004547	BRACKET, CABLE SUPPORT	5
4	1003098	RELAY MODULE ASSY	4
1	1003532	POWER SUPPLY ASSY	3
1	1004539	HOUSING, RELAY MODULE	2
1	1004141	PANEL, FRONT	1

LIST OF MATERIALS

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AGC NAV DSKY ASSY

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DRAWN E.J. Papas DATE 9 [illegible] 63
CHECKED G.L. Brown 25 SEP 63
APPROVAL
APPROVAL [illegible] 9/3/63
APPROVAL
NASA APPROVAL W.J. Rhine 10-3-63
MIT APPROVAL
MIT APPROVAL [illegible]

1003400	
NEXT ASSY	USED ON
APPLICATION	

CODE IDENT NO
SIZE J
NASA DRAWING NO 1003524
SCALE 1/1
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

[illegible]

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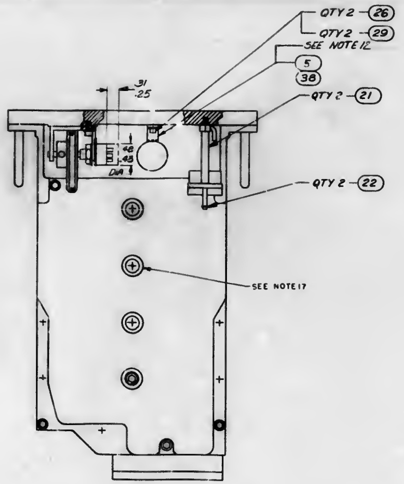
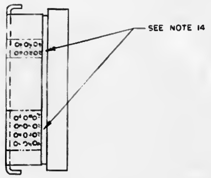
REVISIONS 036 21

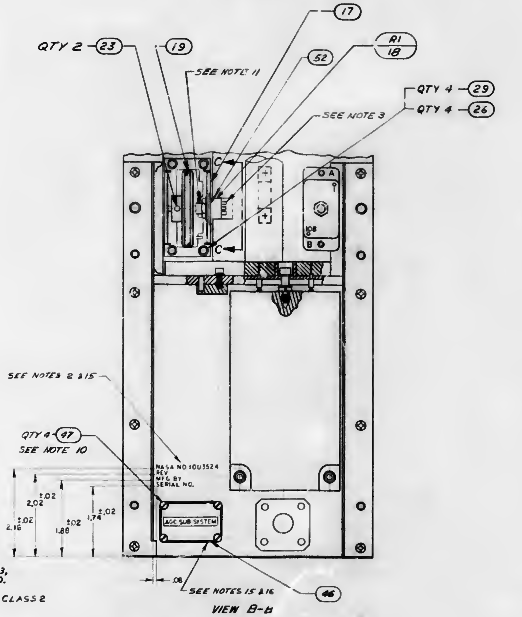
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 04770	[illegible]	[illegible]
B	REVISED PER TDRR 05.92	[illegible]	[illegible]
C	REVISED PER TDRR 05563	[illegible]	[illegible]
D	REVISED PER TDRR 05768	[illegible]	[illegible]
E	REVISED PER TDRR 07263 DRG Wheeler CHK [illegible]	5/1/64	HaC
F	REVISED PER TDRR 07836 DR [illegible] CHK TPA	4/1/64	HaC
G	REVISED PER TDRR 08410 DR [illegible] CHK Cell RTB	5/1/64	HaC
H	REVISED PER TDRR 10613 DR [illegible] CHK AYS	[illegible]	HaC
J	REVISED PER TDRR 11372 DR [illegible] CHK RWS	[illegible]	HaC
K	REVISED PER TDRR 12312 DR R. Bourneau CHK Cell	4/1/64	RHB
L	REVISED PER TDRR 12316 DR [illegible] CHK Cell	[illegible]	HaC
M	REVISED PER TDRR 12773 DR R. [illegible] CHK Cell	11/13/64	HaC
N	REVISED PER TDRR 15119 DR [illegible] CHK CM	[illegible]	[illegible]



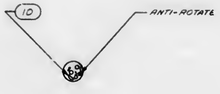


VIEW D-D

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
DS1A1	WHT	30	20	DS1C1
DS2A1				DS2C1
DS3A1				DS3C1
DS4G1				DS4G2
DS3G1				DS3G2
DS5G1				DS5G2
DS2G1				DS2G2
DS1G1	WHT	30	20	DS1G2
DS6G1	BUS&SLV	26	10 & 11	DS6G2
DS6G2				DS6G3
DS6G3				DS6G4
DS6G4	BUS&SLV	26	10 & 11	DS6G5



VIEW B-B



VIEW C-C

NOTES

1. BOND FIND NO.31 & 37 TO FIND NO.12, FIND NO. 32 & 36 TO FIND NO.13, FIND NO.33 TO FIND NO.14 & FIND NO.34, 35 & 30 TO FIND NO. 15 PER ND 1002004
2. MARK .093 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2
3. SOLDER PER ND1002071
4. ~~ND1002181, TYPE I, CL I, AWG 26, COLOR WHITE~~
5. WIRE PER ND1002032
6. AR DENOTES AS REQUIRED
7. MIL-I-631 TYPE F, FORM Ua, GRADE a, CLASS I, CATEGORY I, AWG SIZE NO 24
8. ( ) DENOTES LENGTH IN FEET
9. FIND NO. 41 THRU 45 ARE TO BE SUPPLIED AND IDENTIFIED PER ND1002019
10. SECURE FIND NO. 47 USING MIL-S-22473 GRADE H
11. ENCAPSULATE PER ND1002217
12. LACE FIND NO. 7 TO FIND NO. 5 AND FIND NO. 49 AND FIND NO. 50 USING FIND NO. 58
13. REMOVE LOCKWASHER FROM FIND NO 18. ADJUST FIND NO 18 TO TO ACHIEVE 2°-3° BACK OFF ON FIND NO. 18 BRIGHTNESS STOP
14. SECURE HARNESS IN INDICATED AREA BY STAKING PER ND1002004
15. SERIALIZE PER ND1002023
16. FIND NO. 46 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 AND ASSOCIATED DASH NO.
17. MOUNTING TORQUE FOR JACKING SCREWS (1004579) TO BE 15-19 IN. LBS.
18. MOUNTING TORQUE FOR JACKING SCREWS (1004583) TO BE 3-4 IN. LBS.
19. POTTING IN THIS AREA TO CONFORM TO CONFIGURATION OF FIND NO. 50

REFERENCE

1. 1020105: NAV DSKY TO HANDLING FIXTURE ASSEMBLY

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIAL

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE 9 Aug 63
CHECKED Q.K.E. [illegible] 26 SEP 63
APPROVAL
APPROVAL E J Haggerman 10/2/63
APPROVAL
NASA APPROVAL W J Rhine 10-3-63
MIT APPROVAL
MIT APPROVAL [illegible] 3 Oct 63

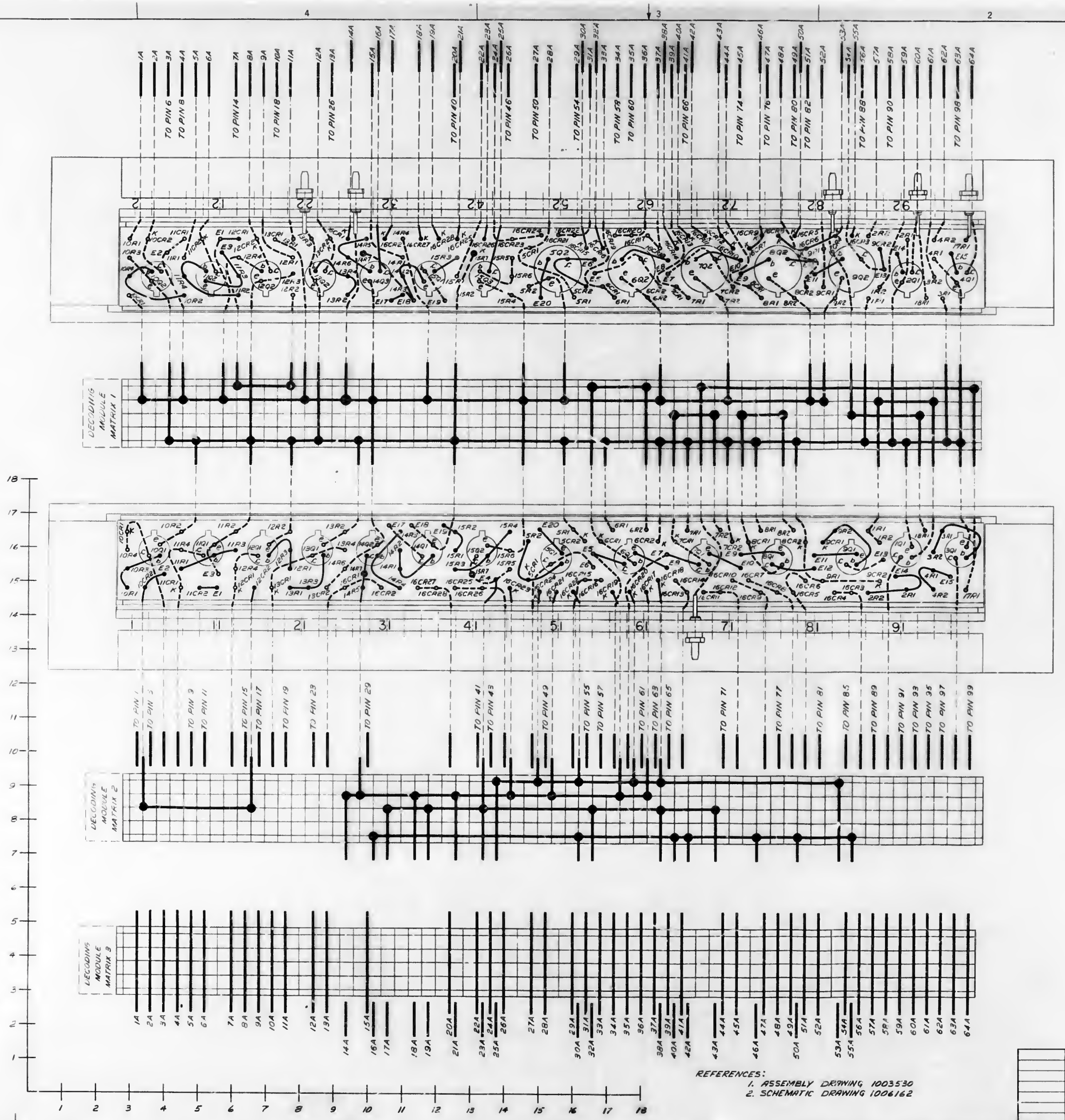
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

AGC NAV DSKY ASSY

CODE IDENT NO ——
SIZE J
NASA DRAWING NO 1003524
SCALE 1/1
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 24324	[illegible]	[illegible]
B	REVISED PER TDRR 13085 DR [illegible] CHK OWM RTM	10/28	[illegible]



NOTES

1. K DENOTES CATHODE SIDE OF DIODE
2. DASH LINES REPRESENT SECOND LEVEL WIRING

REFERENCES:

1. ASSEMBLY DRAWING 1003530
2. SCHEMATIC DRAWING 1006162

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY | USED ON
APPLICATION

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS

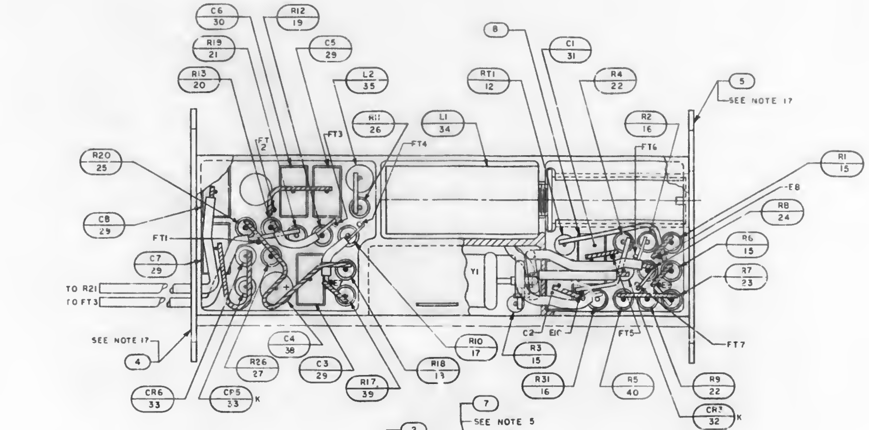
DRAWN R Edwards DATE 19 Aug 63
CHECKED A. K. Bogi 26 AUG 63
APPROVAL
APPROVAL 20 Oct 64
APPROVAL
NASA APPROVAL 10-7-63
M.I.T. APPROVAL
MIT APPROVAL

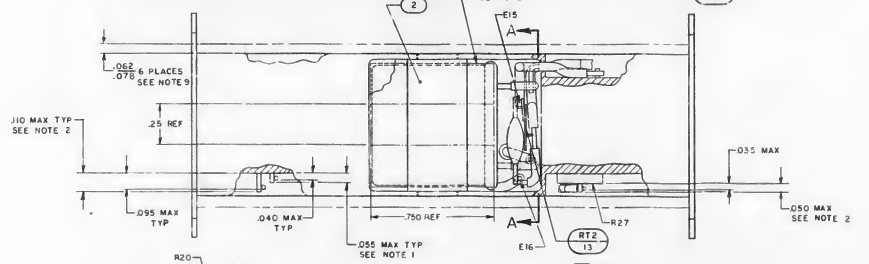
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

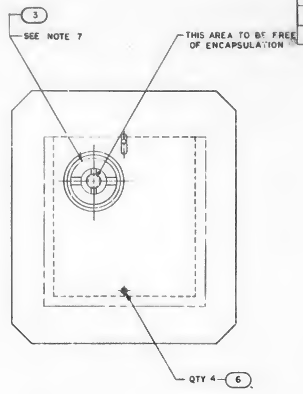
WIRING DIAGRAM
DECODING MODULE D1-D6
AGC DSKY, NAV & MAIN

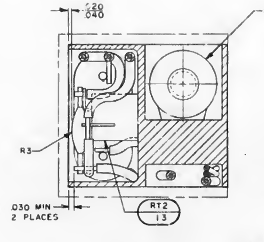
CODE IDENT NO —— SIZE J NASA DRAWING NO 1003525
SCALE 4/1 WT SHEET 1 OF 1

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05785		
B	REVISED PER TDRR 07261 DR H Carlson CHK CW	3/13/64	
C	REVISED PER TDRR 08408 DR [illegible] CHK Q.R.B.	5/7/64	
D	REVISED PER TDRR 11489 DR P. Edward CHK J.J.K.	8/3/64	
E	REVISED PER TDRR 12600 DR [illegible] CHK [illegible]	9/20	
F	REVISED PER TDRR 14475 DR R. [illegible] CHK [illegible]		

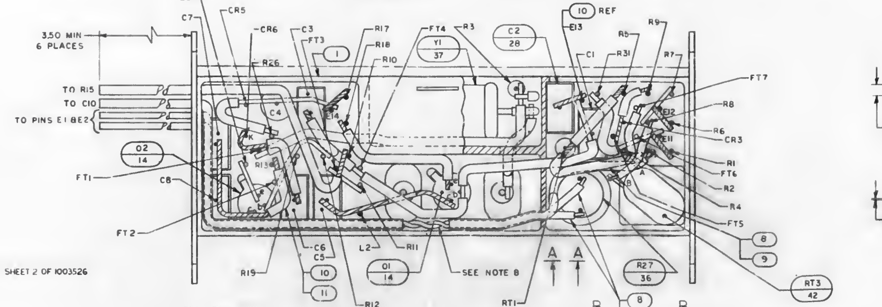




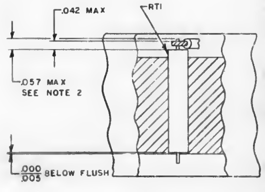




SECTION A-A

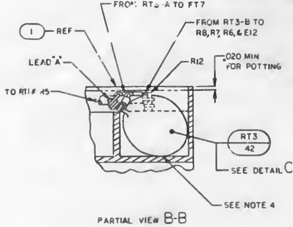


VIEW SHOWN WITH POTTING REMOVED

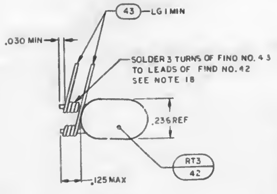


VIEW A-A

NOTES
1. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
2. BLACK DOT INDICATES LEAD TO BE CUT TO DIMENSION SHOWN FOR SECOND LEVEL WIRING
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003 AND ND1002005
4. STAKE FIND NO. 36, FIND NO. 42 AND ALL FEED THROUGHS TO FIND NO. 1 PER ND1002009
5. OVERLAP ENDS OF FIND NO. 7 APPROXIMATELY .25 INCH AT CRYSTAL SURFACES CLOSEST TO FIND NO. 2
6. ~~BOND FIND NO. 36 AND 37 TO FIND NO. 1 PER ND1002004~~
7. REMOVE AND DISCARD EXISTING NUT ON FIND NO. 34 AND REPLACE WITH FIND NO. 3
8. TWIST LEADS AS SHOWN 4 TIMES PER INCH
9. ENCAPSULATE CAVITIES OF FIND NO. 1 TO DIMENSION SHOWN USING RTV11 PER ND1002009
10. AR DENOTES AS REQUIRED
11. K DENOTES CATHODE SIDE OF DIODE
12. THESE PARTS TO BE PART OF KIT ASSEMBLY DWG. NO. 1003530 AND NOMINAL VALUES TO BE SELECTED FROM SHEET 2 OF 1003526
13. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
14. ~~[illegible] LEAD AS SHOWN AND SOLDER TO FIND NO. 41 PER MSFC-158, [illegible] 1963, FLUX CORED~~
15. FIND NO. 7, ALUMINUM BACKED ADHESIVE PER MIL-T-11291 .765/.735 WIDE
16. WHEN THE VALUE OF R8 IS 0 OHMS USE .020 DIA NICKEL WIRE, FIND NO. 10
17. BOND FIND NO. 4 AND FIND NO. 5 TO FIND NO. 1 PER ND1002004
18. SOLDER PER ND1002071



PARTIAL VIEW B-B


43
LG1 MIN
.030 MIN
SOLDER 3 TURNS OF FIND NO. 43 TO LEADS OF FIND NO. 42 SEE NOTE 18
.236 REF
RT3 42
.125 MAX

DETAIL C

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	1006140	SCHEMATIC	REF
AR	1006757-24	WIRE, ELECTRICAL .010 DIA	43
1	1006291	THERMISTOR	42
~~1~~	~~1004864~~	~~SHIELD~~	~~41~~
1	SEE NOTE 12	RESISTOR, FIXED FILM	40
1	SEE NOTE 12	RESISTOR, FIXED, FILM	39
1	1006755-31	CAPACITOR, FIXED, TANTALUM	38
1	SEE NOTE 12	CRYSTAL UNIT, QUARTZ	37
1	1006714	RESISTOR, FIXED, WW	36
1	1010406-12	COIL, RF, CHOKE	35
1	1006846	COIL, RF, VARIABLE	34
2	1006751	SEMICONDUCTOR DEVICE, DIODE	33
1	SEE NOTE 12	SEMICONDUCTOR DEVICE, VAR CAP	32
1	SEE NOTE 12	CAPACITOR, FIXED	31
1	1006793-83	CAPACITOR, FIXED	30
4	1006793-87	CAPACITOR, FIXED	29
1	SEE NOTE 12	CAPACITOR, FIXED	28
1	1006750-36	RESISTOR, FIXED, FILM	27
1	1006750-39	RESISTOR, FIXED, FILM	26
1	1006750-1	RESISTOR, FIXED, FILM	25
1	SEE NOTE 12	RESISTOR, FIXED, FILM	24
1	SEE NOTE 12	RESISTOR, FIXED, FILM	23
2	SEE NOTE 12	RESISTOR, FIXED, FILM	22
1	1006750-60	RESISTOR, FIXED, FILM	21
1	1006750-42	RESISTOR, FIXED, FILM	20
1	1006750-82	RESISTOR, FIXED, FILM	19
1	1006750-8	RESISTOR, FIXED, FILM	18
1	1006750-82	RESISTOR, FIXED, FILM	17
2	SEE NOTE 12	RESISTOR, FIXED, FILM	16
3	SEE NOTE 12	RESISTOR, FIXED, FILM	15
2	1006752	TRANSISTOR, SILICON	14
1	SEE NOTE 12	THERMISTOR	13
1	1006715-1	THERMISTOR	12
AR	1006776-22	INSULATION, SLEEVING	11
AR	1006757-8	WIRE, ELECTRICAL .020 DIA	10
AR	1006776-25	INSULATION, SLEEVING	9
AR	1006757-12	WIRE, ELECTRICAL, .010 DIA	8
AR	SEE NOTE 15	TAPE, ADHESIVE, AL BACKED	7
4	1004544	PIN, GUIDE	6
1	1004555	END PLATE, RIGHT	5
1	1004558	END PLATE, LEFT	4
1	1004556	NUT, SLEEVE	3
1	1004557	SPRING, LEAF	2
1	1004659	HOLDER, COMPONENT	1

LIST OF MATERIALS

1003527		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLE DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINAL FINISH	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DRAWN D.V. [illegible] DATE 26 SEP 63 CHECKED [illegible] 26 SEP 63 APPROVAL W. [illegible] 30 OCT 63 APPROVAL [illegible] NASA APPROVAL [illegible] MIT APPROVAL MIT APPROVAL [illegible]
NEXT ASSY	USED ON		
APPLICATION			

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

COMPONENT ASSEMBLY
OSCILLATOR STAGE
AGC OSCILLATOR

CODE IDENT NO	SIZE	NASA DRAWING NO
—	J	1003526
SCALE 4/1	WT	SHEET 1 OF 2

1003526 F

[illegible]

1003526 F

A	THIS SHEET PER TDRR O
B	REVISED P DR H Carlson
C	REVISED P DR RWD
D	REVISED PE DR R.S.
E	REVISED PE DR
F	REVISED PE DR R.

CHART A FIND NO.16 REF R31	
DASH NO.	OHMS ±2%
1006750 - 56	10K
- 140	10.5K
- 57	11K
- 141	11.5K
- 58	12K
- 142	12.5K
- 59	13K
- 143	14K
- 60	15K
- 144	15.5K
- 61	16K
- 145	17K
- 62	18K
- 146	19K
- 63	20K
- 147	21K
- 64	22K
- 148	23K
- 65	24K
- 149	25.5K
- 66	27K
- 150	28.5K
- 67	30K
- 151	31.5K
- 68	33K
- 152	34.5K
- 69	36K
- 153	37.5K
- 70	39K
- 154	41K
1006750 - 71	43K

CHART B FIND NO.15 REF R1	
DASH NO.	OHMS ±2%
1006750 - 52	6.8K
- 136	7.15K
- 53	7.5K
- 137	7.85K
- 54	8.2K
- 138	8.65K
- 55	9.1K
- 139	9.55K
- 56	10K
- 140	10.5K
- 57	11K
- 141	11.5K
- 58	12K
- 142	12.5K
- 59	13K
- 143	14K
- 60	15K
- 144	15.5K
- 61	16K
- 145	17K
- 62	18K
- 146	19K
- 63	20K
- 147	21K
1006750 - 64	22K

CHART C FIND NO.16 REF R2			
DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 56	10K	1006750 - 157	53.5K
- 140	10.5K	- 74	56K
- 57	11K	- 158	59K
- 141	11.5K	- 75	62K
- 58	12K	- 159	65K
- 142	12.5K	- 76	68K
- 59	13K	- 160	71.5K
- 143	14K	- 77	75K
- 60	15K	- 161	78.5K
- 144	15.5K	- 78	82K
- 61	16K	- 162	86.5K
- 145	17K	- 79	91K
- 62	18K	- 163	95.5K
- 146	19K	- 80	100K
- 63	20K	- 164	105K
- 147	21K	- 81	110K
- 64	22K	- 165	115K
- 148	23K	- 82	120K
- 65	24K	- 166	125K
- 149	25.5K	- 83	130K
- 66	27K	- 167	140K
- 150	28.5K	1006750 - 84	150K
- 67	30K		
- 151	31.5K		
- 68	33K		
- 152	34.5K		
- 69	36K		
- 153	37.5K		
- 70	39K		
- 154	41K		
- 71	43K		
- 155	45K		
- 72	47K		
- 156	49K		
1006750 - 73	51K		

CHART F FIND NO.39 REF R17	
DASH NO.	OHMS ±2%
1006750 - 55	9.1K
- 56	10K
- 57	11K
- 58	12K
- 59	13K
1006750 - 60	15K

CHART H FIND NO.13 REF RT2	
DASH NO.	OHMS ±2%
1006712 - 1	500
1006712 - 2	1000
1006712 - 3	5000

CHART G FIND NO.28	
DASH NO.	VALUE UUF
1006793 - 37	10
- 38	11
- 39	12
- 40	13
- 41	15
- 42	16
- 43	18
- 44	20
- 45	22
- 46	24
- 47	27
- 48	30
- 49	33
- 50	36
- 51	39
- 52	43
- 53	47
- 54	51
- 55	56
- 56	62
- 57	68
- 58	75
- 59	82
- 60	91
1006793 - 61	100

CHART D FIND NO.15 REF R3					
DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 25	510	1006750 - 43	3 K	1006750 - 143	14 K
- 109	535	- 127	3.15K	- 60	15 K
- 26	560	- 44	3.3K	- 144	15.5K
- 110	590	- 128	3.45K	- 61	16 K
- 27	620	- 45	3.6K	- 145	17 K
- 111	650	- 129	3.75K	- 62	18 K
- 28	680	- 46	3.9K	- 146	19 K
- 112	715	- 130	4.1K	- 63	20K
- 29	750	- 47	4.3K	- 147	21K
- 113	785	- 131	4.5K	- 64	22K
- 30	820	- 48	4.7K	- 148	23K
- 114	865	- 132	4.9K	- 65	24K
- 31	910	- 49	5.1K	- 149	25.5K
- 115	955	- 133	5.35K	- 66	27K
- 32	1K	- 50	5.6K	- 150	28.5K
- 116	1.05K	- 134	5.9K	- 67	30K
- 33	1.1K	- 51	6.2K	- 151	31.5K
- 117	1.15K	- 135	6.5K	- 68	33K
- 34	1.2K	- 52	6.8K	- 152	34.5K
- 118	1.25K	- 136	7.15K	- 69	36K
- 35	1.3K	- 53	7.5K	- 153	37.5K
- 119	1.4K	- 137	7.85K	- 70	39K
- 36	1.5K	- 54	8.2K	- 154	41K
- 120	1.55K	- 138	8.65K	- 71	43K
- 37	1.6K	- 55	9.1K	- 155	45K
- 121	1.7K	- 139	9.55K	- 72	47K
- 39	1.8K	- 56	10 K	- 156	49K
- 122	1.9K	- 140	10.5K	- 73	51K
- 39	2.0K	- 57	11 K	- 157	53.5K
- 123	2.1K	- 141	11.5K	- 74	56K
- 40	2.2K	- 58	12 K	- 158	59K
- 124	2.3K	- 142	12.5K	1006750 - 75	62K
- 41	2.4K	1006750 - 59	13 K		
- 125	2.55K				
- 42	2.7K				
1006750 - 126	2.85K				

CHART E FIND NO.15 REF R6			
DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 32	1 K	1006750 - 51	6.2K
- 116	1.05K	- 135	6.5K
- 33	1.1K	- 52	6.8K
- 117	1.15K	- 136	7.15K
- 34	1.2K	- 53	7.5K
- 118	1.25K	- 137	7.85K
- 35	1.3K	- 54	8.2K
- 119	1.4K	- 138	8.65K
- 36	1.5K	- 55	9.1K
- 120	1.55K	- 139	9.55K
- 37	1.6K	- 56	10 K
- 121	1.7K	- 140	10.5K
- 38	1.8K	- 57	11 K
- 122	1.9K	- 141	11.5K
- 39	2.0K	- 58	12 K
- 123	2.1K	- 142	12.5K
- 40	2.2K	- 59	13 K
- 124	2.3K	- 143	14 K
- 41	2.4K	- 60	15K
- 125	2.55K	- 144	15.5K
- 42	2.7K	- 61	16K
- 126	2.85K	- 145	17K
- 43	3 K	- 62	18K
- 127	3.15K	- 146	19K
- 44	3.3K	- 63	20K
- 128	3.45K	- 147	21K
- 45	3.6K	- 64	22K
- 129	3.75K	- 148	23K
- 46	3.9K	- 65	24K
- 130	4.1K	- 149	25.5K
- 47	4.3K	- 66	27K
- 131	4.5K	- 150	28.5K
- 48	4.7K	- 67	30K
- 132	4.9K	- 151	31.5K
- 49	5.1K	1006750 - 68	33K
- 133	5.35K		
- 50	5.6K		
1006750 - 134	5.9K		

CHART J FIND NO.24 REF R8			
DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 25	510	1006750 - 43	3 K
- 109	535	- 127	3.15K
- 26	560	- 44	3.3K
- 110	590	- 128	3.45K
- 27	620	- 45	3.6K
- 111	650	- 129	3.75K
- 28	680	- 46	3.9K
- 112	715	- 130	4.1K
- 29	750	- 47	4.3K
- 113	785	- 131	4.5K
- 30	820	- 48	4.7K
- 114	865	- 132	4.9K
- 31	910	- 49	5.1K
- 115	955	- 133	5.35K
- 32	1 K	- 50	5.6K
- 116	1.05K	- 134	5.9K
- 33	1.1K	- 51	6.2K
- 117	1.15K	- 135	6.5K
- 34	1.2K	- 52	6.8K
- 118	1.25K	- 136	7.15K
- 35	1.3K	- 53	7.5K
- 119	1.4K	- 137	7.85K
- 36	1.5K	- 54	8.2K
- 120	1.55K	- 138	8.65K
- 37	1.6K	- 55	9.1K
- 121	1.7K	- 139	9.55K
- 38	1.8K	- 56	10K
- 122	1.9K	- 140	10.5K
- 39	2.0K	- 57	11 K
- 123	2.1K	- 141	11.5K
- 40	2.2K	1006750 - 58	12K
- 124	2.3K	1003757 - 8	0
- 41	2.4K		
- 125	2.55K		
- 42	2.7K		
1006750 - 126	2.85K		

Ⓐ THIS SHEET ADDED

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING	QTY REQD	PART OR IDENTIFYING NO	
		MATERIAL	LIST OF MA		
		HEAT TREATMENT	M I T INSTRUMENTATION LAB CAMBRIDGE, MASS		MA
NEXT ASSY	USED ON	FINAL FINISH	DRAWN J.E. Walsh DATE 3/9/64 CHECKED APPROVAL APPROVAL E.L. NASA APPROVAL MIT APPROVAL		COMPO OSCIL AGC
APPLICATION					CODE IDENT NO SCALE NONE

1003526 F

SHEET 2

SYM	DESCRIPTION	DATE	APPROVAL
A	THIS SHEET ADDED PER TDRR 05789		WK.
B	REVISED PER TDRR 09261 DR H Carlson CHK	3/20/64	
C	REVISED PER TDRR 08408 DR CHK A.R.B.	5/7/64	
D	REVISED PER TDRR 11489 DR R.S. CHK	8/5/64	
E	REVISED PER TDRR 12600 DR CHK	9/23/64	
F	REVISED PER TDRR 14475 DR R. CHK		

CHART A FIND NO.16
REF R31

DASH NO.	OHMS ±2%
1006750 - 56	10K
- 140	10.5K
-57	11K
- 141	11.5K
- 58	12K
-142	12.5K
-59	13K
-143	14K
-60	15K
-144	15.5K
- 61	16K
-145	17K
-62	18K
-146	19K
- 63	20K
-147	21K
- 64	22K
-148	23K
-65	24K
-149	25.5K
-66	27K
-150	28.5K
- 67	30K
-151	31.5K
-68	33K
-152	34.5K
- 69	36K
-153	37.5K
-70	39K
-154	41K
1006750 - 71	43K

CHART B FIND NO.15
REF R1

DASH NO.	OHMS ±2%
1006750 - 52	6.8K
- 136	7.15K
- 53	7.5K
- 137	7.85K
- 54	8.2K
- 138	8.65K
- 55	9.1K
- 139	9.55K
-56	10K
-140	10.5K
-57	11K
-141	11.5K
-58	12K
-142	12.5K
-59	13K
-143	14K
-60	15K
-144	15.5K
-61	16K
-145	17K
-62	18K
-146	19K
-63	20K
-147	21K
1006750 - 64	22K

CHART C FIND NO.16
REF R2

DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 56	10K	1006750 - 157	53.5K
- 140	10.5K	- 74	56K
- 57	11K	- 158	59K
- 141	11.5K	- 75	62K
- 58	12K	- 159	65K
- 142	12.5K	- 76	68K
- 59	13K	- 160	71.5K
- 143	14K	- 77	75K
- 60	15K	- 161	78.5K
- 144	15.5K	- 78	82K
- 61	16K	- 162	86.5K
- 145	17K	- 79	91K
- 62	16K	- 163	95.5K
- 146	19K	- 80	100K
- 63	20K	- 164	105K
- 147	21K	- 81	110K
- 64	22K	- 165	115K
- 148	23K	- 82	120K
- 65	24K	- 166	125K
- 149	25.5K	- 83	130K
- 66	27K	- 167	140K
- 150	28.5K	1006750 - 84	150K
- 67	30K		
- 151	31.5K		
- 68	33K		
- 152	34.5K		
- 69	36K		
- 153	37.5K		
- 70	39K		
- 154	41K		
- 71	43K		
- 155	45K		
- 72	47K		
- 156	49K		
1006750 - 73	51K		

CHART F FIND NO.39
REF R17

DASH NO.	OHMS ±2%
1006750 -55	9.1K
-56	10K
-57	11K
-58	12K
-59	13K
1006750 -60	15K

CHART H FIND NO.13
REF RT2

DASH NO.	OHMS ±2%
1006712 - 1	500
1006712 - 2	1000
1006712 - 3	5000

CHART G
FIND NO.28

DASH NO.	VALUE UUF
1006793 - 37	10
- 38	11
- 39	12
- 40	13
- 41	15
- 42	16
- 43	18
- 44	20
- 45	22
- 46	24
- 47	27
- 48	30
- 49	33
- 50	36
- 51	39
- 52	43
- 53	47
- 54	51
- 55	56
- 56	62
- 57	68
- 58	75
- 59	82
- 60	91
1006793 - 61	100

CHART D FIND NO.15
REF R3

DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 25	510	1006750 - 43	3K	1006750 - 143	14K
- 109	535	- 127	3.15K	- 60	15K
- 26	560	- 44	3.3K	- 144	15.5K
- 110	590	- 128	3.45K	- 61	16K
- 27	620	- 45	3.6K	- 145	17K
- 111	650	- 129	3.75K	- 62	18K
- 28	680	- 46	3.9K	- 146	19K
- 112	715	- 130	4.1K	- 63	20K
- 29	750	- 47	4.3K	- 147	21K
- 113	785	- 131	4.5K	- 64	22K
- 30	820	- 48	4.7K	- 148	23K
- 114	865	- 132	4.9K	- 65	24K
- 31	910	- 49	5.1K	- 149	25.5K
- 115	955	- 133	5.35K	- 66	27K
- 32	1K	- 50	5.6K	- 150	28.5K
- 116	1.05K	- 134	5.9K	- 67	30K
- 33	1.1K	- 51	6.2K	- 151	31.5K
- 117	1.15K	- 135	6.5K	- 68	33K
- 34	1.2K	- 52	6.8K	- 152	34.5K
- 118	1.25K	- 136	7.15K	- 69	36K
- 35	1.3K	- 53	7.5K	- 153	37.5K
- 119	1.4K	- 137	7.85K	- 70	39K
- 36	1.5K	- 54	8.2K	- 154	41K
- 120	1.55K	- 138	8.65K	- 71	43K
- 37	1.6K	- 55	9.1K	- 155	45K
- 121	1.7K	- 139	9.55K	- 72	47K
- 38	1.8K	- 56	10K	- 156	49K
- 122	1.9K	- 140	10.5K	- 73	51K
- 39	2.0K	- 57	11K	- 157	53.5K
- 123	2.1K	- 141	11.5K	- 74	56K
- 40	2.2K	- 58	12K	- 158	59K
- 124	2.3K	- 142	12.5K	1006750 - 75	62K
- 41	2.4K	1006750 - 59	13K		
- 125	2.55K				
- 42	2.7K				
1006750 - 126	2.85K				

CHART E FIND NO.15
REF R6

DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 32	1K	1006750 - 51	6.2K
- 116	1.05K	- 135	6.5K
- 33	1.1K	- 52	6.8K
- 117	1.15K	- 136	7.15K
- 34	1.2K	- 53	7.5K
- 118	1.25K	- 137	7.85K
- 35	1.3K	- 54	8.2K
- 119	1.4K	- 138	8.65K
- 36	1.5K	- 55	9.1K
- 120	1.55K	- 139	9.55K
- 37	1.6K	- 56	10K
- 121	1.7K	- 140	10.5K
- 38	1.8K	- 57	11K
- 122	1.9K	- 141	11.5K
- 39	2.0K	- 58	12K
- 123	2.1K	- 142	12.5K
- 40	2.2K	- 59	13K
- 124	2.3K	- 143	14K
- 41	2.4K	- 60	15K
- 125	2.55K	- 144	15.5K
- 42	2.7K	- 61	16K
- 126	2.85K	- 145	17K
- 43	3K	- 62	18K
- 127	3.15K	- 146	19K
- 44	3.3K	- 63	20K
- 128	3.45K	- 147	21K
- 45	3.6K	- 64	22K
- 129	3.75K	- 148	23K
- 46	3.9K	- 65	24K
- 130	4.1K	- 149	25.5K
- 47	4.3K	- 66	27K
- 131	4.5K	- 150	28.5K
- 48	4.7K	- 67	30K
- 132	4.9K	- 151	31.5K
- 49	5.1K	1006750 - 68	33K
- 133	5.35K		
- 50	5.6K		
1006750 - 134	5.9K		

CHART J FIND NO.24
REF R8

DASH NO.	OHMS ±2%	DASH NO.	OHMS ±2%
1006750 - 25	510	1006750 - 43	3K
- 109	535	- 127	3.15K
- 26	560	- 44	3.3K
- 110	590	- 128	3.45K
- 27	620	- 45	3.6K
- 111	650	- 129	3.75K
- 28	680	- 46	3.9K
- 112	715	- 130	4.1K
- 29	750	- 47	4.3K
- 113	785	- 131	4.5K
- 30	820	- 48	4.7K
- 114	865	- 132	4.9K
- 31	910	- 49	5.1K
- 115	955	- 133	5.35K
- 32	1K	- 50	5.6K
- 116	1.05K	- 134	5.9K
- 33	1.1K	- 51	6.2K
- 117	1.15K	- 135	6.5K
- 34	1.2K	- 52	6.8K
- 118	1.25K	- 136	7.15K
- 35	1.3K	- 53	7.5K
- 119	1.4K	- 137	7.85K
- 36	1.5K	- 54	8.2K
- 120	1.55K	- 138	8.65K
- 37	1.6K	- 55	9.1K
- 121	1.7K	- 139	9.55K
- 38	1.8K	- 56	10K
- 122	1.9K	- 140	10.5K
- 39	2.0K	- 57	11K
- 123	2.1K	- 141	11.5K
- 40	2.2K	1006750 - 58	12K
- 124	2.3K	1006757 - 8	0
- 41	2.4K		
- 125	2.55K		
- 42	2.7K		
1006750 - 126	2.85K		

Ⓐ THIS SHEET ADDED

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
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FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY | USED ON
APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

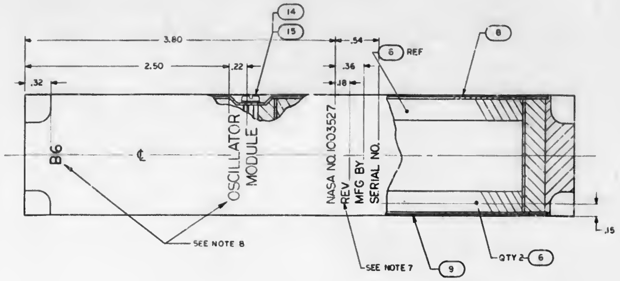
DRAWN J.E. Walsh DATE 3/4/64
CHECKED
APPROVAL
APPROVAL E.F.
NASA APPROVAL
MIT APPROVAL W

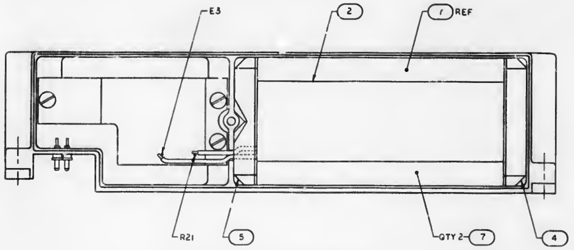
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

COMPONENT ASSEMBLY
OSCILLATOR STAGE
AGC OSCILLATOR

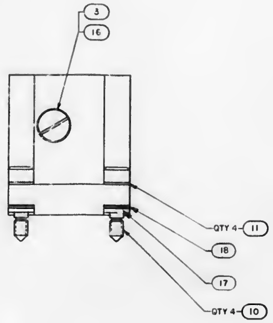
CODE IDENT NO. —— | SIZE J | NASA DRAWING NO. 1003526
SCALE NONE | WT | SHEET 2 OF 2

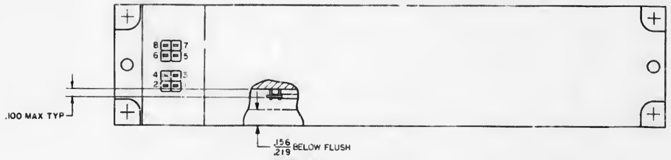
REV	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04/5	10 Oct 63	[illegible]
B	REVISED PER TDRR 6438	[illegible]	[illegible]
C	REVISED PER TDRR 31783	11-15-63	[illegible]
D	REVISED PER TDRR 13122 DR A. [illegible] CHK [illegible] QTM	[illegible]	[illegible]

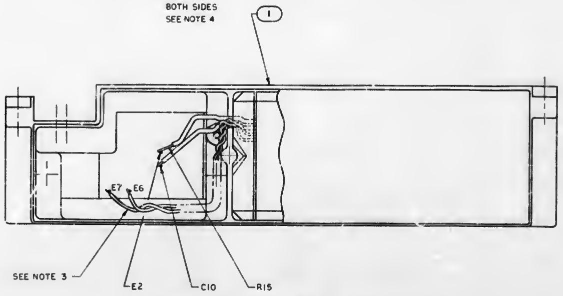




VIEW SHOWN WITH POTTING, FIND NO. 6 AND FIND NO. 9 REMOVED FOR CLARITY







VIEW SHOWN WITH POTTING REMOVED

NOTES

1. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003 AND ND1002005
2. ALL LEADS TO BE CLIPPED .010/.030 BEYOND WELDS
3. TWIST LEADS AS SHOWN 4 TIMES PER INCH
4. ENCAPSULATE TO DIMENSIONS SHOWN, USING RTV 11 PER ND1002009
5. BOND FIND NO. 8 & 9 TO FIND NO. 1 PER ND1002004
6. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
7. MARK .062 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I, SERIALIZE PER ND1002023
8. MARK .125 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
4	1004546-3	WASHER, FLAT	18
4	MS16633-4015	RING, RETAINING, EXTERNAL "E"	17
1	1006730-120	SCREW, SEALING	16
2	MS35233-13	SCREW, PAN HD	15
2	MS35333-70	WASHER, LOCK, INT TOOTH	14
~~4~~	~~MS171432~~	~~PIN, SPRING~~	~~13~~
~~4~~	~~1004207~~	~~DRIVE CYLINDER, EJECTION SCREW~~	~~12~~
4	1004546-1	WASHER, FLAT	11
4	1004579-1	SCREW, JACKING	10
1	1004550	COVER B	9
1	1004549	COVER A	8
2	1004554	INSULATOR	7
2	1004553	INSULATOR, SIDE	6
1	1004551	INSULATOR, LEFT	5
1	1004552	INSULATOR, RIGHT	4
1	AN6227-3	GASKET, O RING	3
1	1003526	COMPONENT ASSY, OSCILLATOR	2
1	1003528	HEADER AND POWER STAGE ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

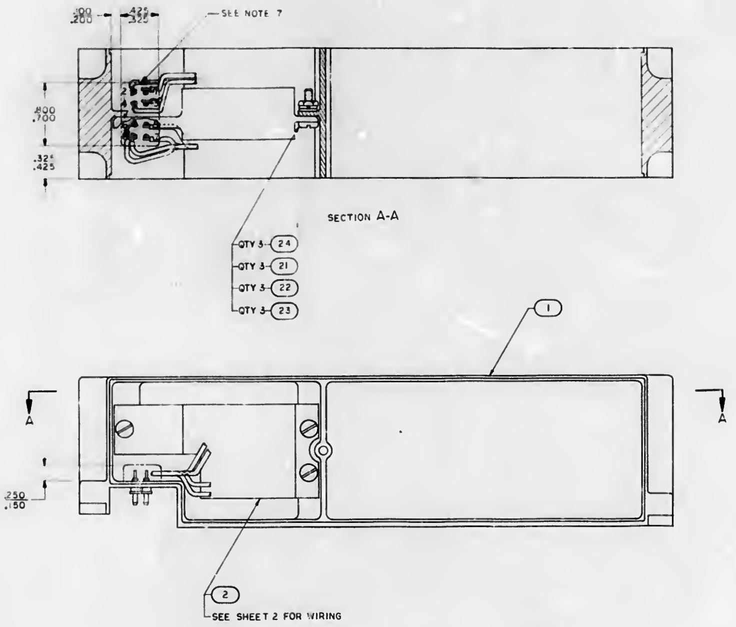
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN B Jansen DATE 18 SEP 63
CHECKED R. Edwards 23 Sep 63
APPROVAL W.B. [illegible] 2 Oct 63
APPROVAL E. [illegible]
NASA APPROVAL W.D. [illegible] 10-3-63
MIT APPROVAL
MIT APPROVAL [illegible] 3 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC OSCILLATOR
ASSEMBLY

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003527
SCALE 2/1
WT
SHEET 1 OF 1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05789		



NOTES
1. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003 AND ND1002005
2. ALL LEADS TO BE CLIPPED .010/.030 BEYOND WELDS
3. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
4. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. CROSS HATCHING INDICATES SECOND LEVEL WIRING
6. AR DENOTES AS REQUIRED
7. SEAL PIN AREA TO DIMENSIONS SHOWN USING RTV 882 PER ND 1002009
8. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

FOR LIST OF FIND NUMBERS SEE SHEET 2

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

1003527		
NEXT ASSY	USED ON	
APPLICATION		

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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN B. Jensen DATE 17SEP63
CHECKED R. Edward 24 Sep 63
APPROVAL W. Dunn 2 Oct 63
APPROVAL
NASA APPROVAL W. J. Rhine 10-3-63
MIT APPROVAL
MIT APPROVAL

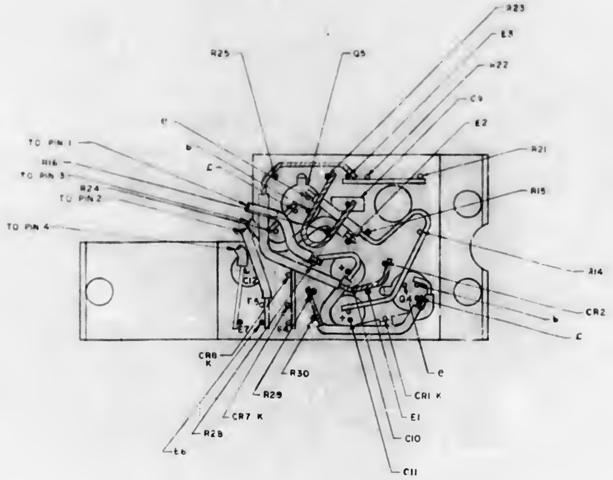
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

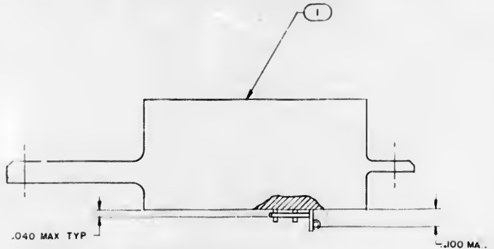
HEADER & POWER STAGE ASSEMBLY
AGC OSCILLATOR

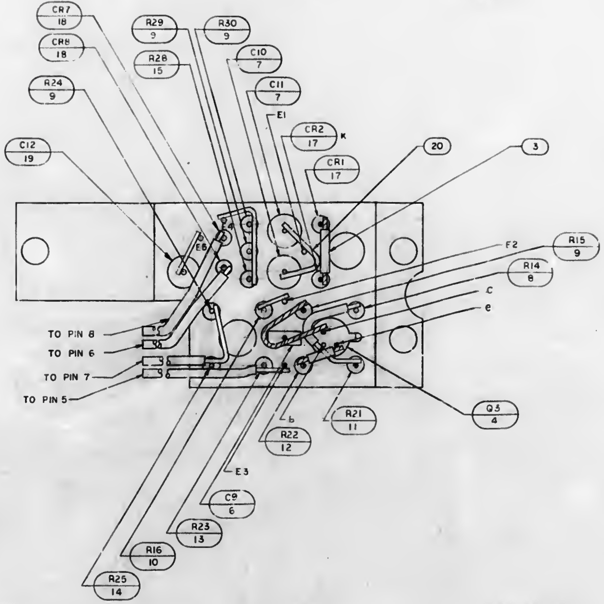
CODE IDENT NO ——
SIZE E
NASA DRAWING NO 1003528
SCALE 2/1
WT
SHEET 1 OF 2

1003528

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 35789		







QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
3	NAS671-4	NUT, PLAIN HEX	24
3	MS35337-78	WASHER, LOCK	23
3	NAS620-4	WASHER, FLAT	22
3	MS35233-5	SCREW, PAN HEAD	21
AR	1006757-6	WIRE, ELECTRICAL .02 DIA.	20
1	1006777-32	CAPACITOR, FIXED	19
2	1006751	SEMICONDUCTOR DEVICE, DIODE	18
2	1006838	SEMICONDUCTOR DEVICE, DIODE	17
~~2~~	~~1006750-39~~	~~RESISTOR, FIXED, FILM~~	16
1	1006750-46	RESISTOR, FIXED, FILM	15
1	1006750-25	RESISTOR, FIXED, FILM	14
1	1006750-80	RESISTOR, FIXED, FILM	13
1	1006750-1	RESISTOR, FIXED, FILM	12
1	1006750-60	RESISTOR, FIXED, FILM	11
1	1006750-72	RESISTOR, FIXED, FILM	10
4	1006750-33	RESISTOR, FIXED, FILM	9
1	1006750-74	RESISTOR, FIXED, FILM	8
2	1006755-79	CAPACITOR, FIXED, TANTALUM	7
1	1006795-45	CAPACITOR, FIXED	6
1	1006753	TRANSISTOR SILICON	5
2	1006752	TRANSISTOR, SILICON	4
AR	1006776-22	INSULATION, SLEEVING	3
1	1003537	HEADER ASSEMBLY	2
1	1004534	HOLDER, COMPONENT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

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DRAWN B. Jensen DATE 4 SEPT 63
CHECKED R. Edwards 12 Nov 63
APPROVAL W. Stearns 20 Nov 63
APPROVAL

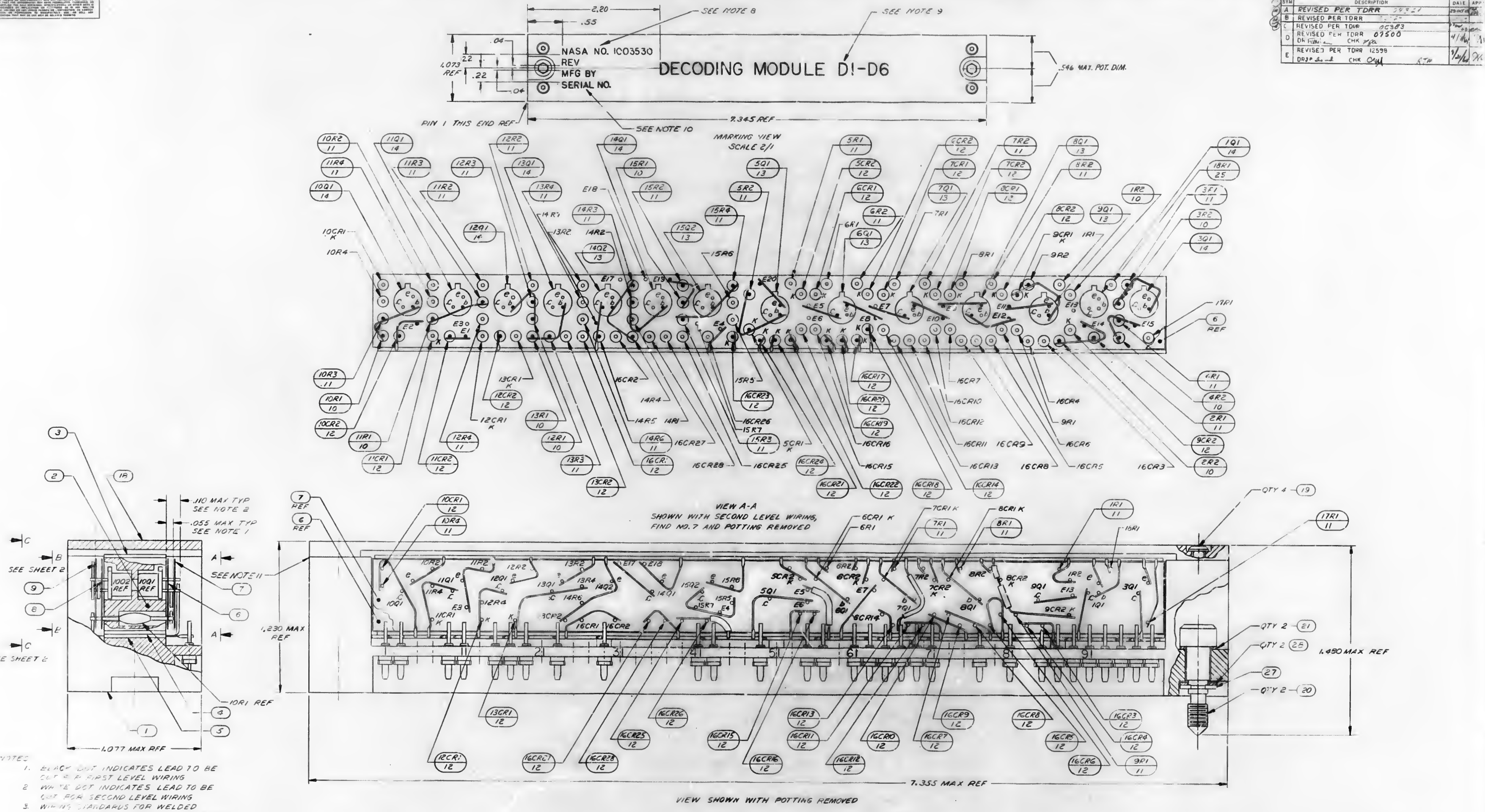
NASA APPROVAL 10-3-63
MIT APPROVAL
MIT APPROVAL 3/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER & POWER STAGE ASSEMBLY AGC OSCILLATOR

CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003528
SCALE 4/1
WT
SHEET 2 OF 2

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 09321	29 OCT	
B	REVISED PER TDRR		
C	REVISED PER TDRR 05383		
D	REVISED PER TDRR 07500 DR Fuhrman CHK	4/1/64	
E	REVISED PER TDRR 12598 DR CHK	9/21/64	



VIEW SHOWN WITH POTTING REMOVED

FOR LIST OF FIND NUMBERS SEE SHEET 2

NOTES

1. BLACK DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
2. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. [illegible] AS REQUIRED
5. K DENOTES CATHODE SIDE OF DIODE
6. ENCAPSULATE MODULE PER 1002002
7. STAKE FIND NOS 13, [illegible], AND 15 PER ND1002004
8. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2
9. MARK .250 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2
10. SERIALIZE PER ND1002023
11. APPLY FIND NO. 26 TO INTERFACE PRIOR TO ASSEMBLY

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1003540	
1003524	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DR R. Edwards DATE
CHECKED
APPROVAL
APPROVAL 3 OCT 63
APPROVAL
NASA APPROVAL 10-7-63
MIT APPROVAL
MIT APPROVAL 3 Oct 63

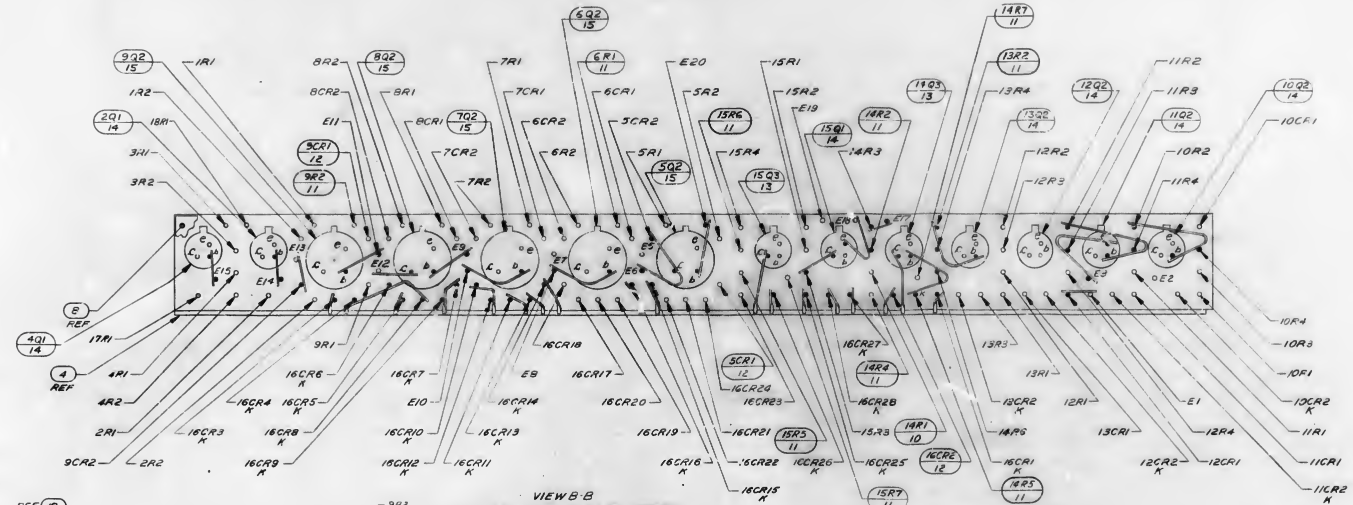
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

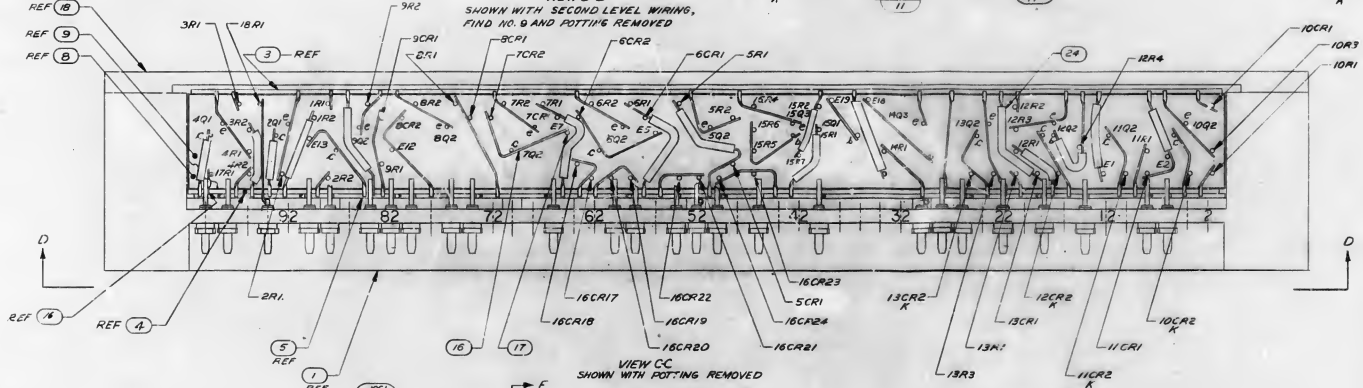
DECODING MODULE ASSEMBLY D1-D6
AGC DSKY, NAV & MAIN

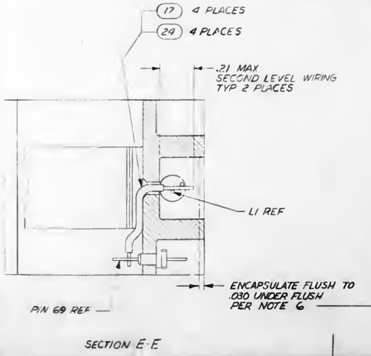
CODE IDENT NO —
SIZE J
NASA DRAWING NO 1003530
SCALE 4/1
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 07327		
B	REVISED PER TDRR		
C	REVISED PER TDRR 05353		
D	REVISED PER TDRR 07500 DR Fulton CHK	4/1/64	
E	REVISED PER TDRR 12598 DR CHK	9/21/64	

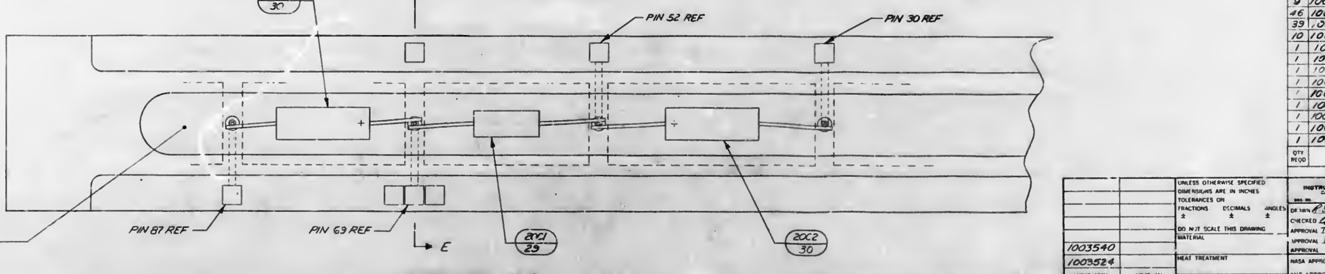






17 4 PLACES
29 4 PLACES
.21 MAX SECOND LEVEL WIRING TYP 2 PLACES
L1 REF
ENCAPSULATE FLUSH TO .030 UNDER FLUSH PER NOTE 6
PIN 69 REF

SECTION E-E



PARTIAL VIEW D-D

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1006755-79	CAPACITOR, FIXED	30
1	1010906-7	COIL, RF, CHOKE	29
☒	1006162	SCHEMATIC	REF
☒	1003525	WIRING DIAGRAM	REF
2	1004546-3	WASHER, FLAT	28
2	MS16633-4015	RING, RETAINING, EXTERNAL	27
AR	1006879	COMPOUND. THERMOCONDUCTIVE	26
1	1006750-56	RESISTOR, FIXED FILM INS	25
AR	1006776-22	INSULATION, SLEEVING	24
~~2~~	~~MS171432~~	~~PIN, SPRING~~	23
~~2~~	~~1004207~~	~~DRIVE CYLINDER, EJECT SCR~~	22
2	1004546-1	WASHER, FLAT	21
2	1004579-1	SCREW, JACKING	20
4	1006783-10	SCREW, BUTTON HEAD	19
1	1004541	COVER	18
AR	1006757-8	WIRE, ELECTRICAL .020 DIA	17
AR	1006757-1	WIRE, ELECTRICAL .010 X .020	16
5	1006759	TRANSISTOR, SILICON TYPE NPN	15
14	1006753	TRANSISTOR, SILICON TYPE PNP	14
9	1006752	TRANSISTOR, SILICON TYPE NPN	13
46	1006751	SEMICONDUCTOR DEVICE, DIODE	12
39	1006750-39	RESISTOR, FIXED FILM INS	11
10	1006750-15	RESISTOR, FIXED FILM INS	10
1	1004536-2	INSULATOR	9
1	1004536-1	INSULATOR	8
1	1004535-2	INSULATOR	7
1	1004535-1	INSULATOR	6
1	1003523-3	500 MATRIX ASSY	5
1	1003523-2	500 MATRIX ASSY	4
1	1003523-1	500 MATRIX ASSY	3
1	1004155	BLOCK, COMPONENT	2
1	1003536	HEADER ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003540	
1003524	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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HOUSTON, TEXAS

DECODING MODULE ASSEMBLY DI-DE

AGC DSKY, NAV & MAIN

CODE IDENT NO —
SIZE J
NASA DRAWING NO 1003530
SCALE 4/1
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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REVISIONS 036 21			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 07500 DR F.L.Wilson CHK	4/7/64	AuC
B	REVISED PER TDRR 10737 DR CHK R.A.E., RTW	9/3/64	AuC
C	REVISED PER TDRR 16100 DR CHK R.A.E.	4/2/65	

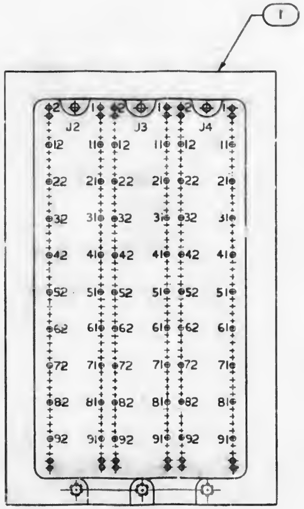
WIRING LEGEND

FROM	COLOR	AWG	FIND NO.	TO
*J2-69	YELLOW	30	2	J3-69
J3-69	↑	↑	↑	J4-69
J3-22				J3-52
J2-26				J3-43
J3-43				J4-65
*J2-28				J2-30
J2-30				J2-87
J2-40				J3-54
J3-54				J4-57
J2-43				J3-26
J3-26				J3-81
J2-46				J3-80
J3-80				J4-49
J3-49				J3-40
J3-40				J2-54
J2-55				J3-55
J3-55				J3-71
J2-61				J3-65
J3-65				J3-66
J3-82				J2-63
J2-63				J3-57
J2-66				J2-81
J2-81				J3-61
J2-74				J2-71
J2-71				J3-74
J2-76				J2-65
J2-65				J3-88
J2-80				J2-57
J2-57				J3-46
J2-82				J3-63
J3-63				J2-49
J2-22				J2-52
J2-52				J2-67
J4-22				J4-52
J2-87				J3-87
J3-87				J3-30
J3-30	↓	↓	↓	J3-28
J3-28	YELLOW	30	2	J4-28

*INDICATES WIRE WRAP MUST BE ON FIRST LEVEL

WIRING LEGEND

FROM	COLOR	AWG	FIND NO.	TO
J4-28	YELLOW	30	2	J4-30
J4-30	YELLOW	30	2	J4-87



-011	1,2,3 & 5
-000	1 THRU 5
DASH NO.	APPLICABLE NOTES
NOTES APPLICATION	

NOTES
1. WIRE PER ND1002031
2. AR DENOTES AS REQUIRED
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
4. ROUTE WIRES PER DWG NO. 1004572
5. THE ORIGINAL CONFIGURATION IS IDENTIFIED BY THE DRAWING NUMBER AND A -000 SUFFIX

☒	—	1005758	WIREWRAP CARD DECK	REF
AR	AR	1006732-1	WIRE, ELECTRICAL	2
1	1	1004154	PLATE, DECODING MODULE	1
QTY REQD	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
-011	-000	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003805	
1003550	
1003533	
APPLICATION	

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MATERIAL
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DWG NO CONTRACT
DRAWN D.O. Clement DATE 27AUG63
CHECKED 3SEP63
APPROVAL
APPROVAL Eldon C. Hall
NASA APPROVAL W.J. Rhine 10-3-63
MIT APPROVAL
MIT APPROVAL 3OCT63

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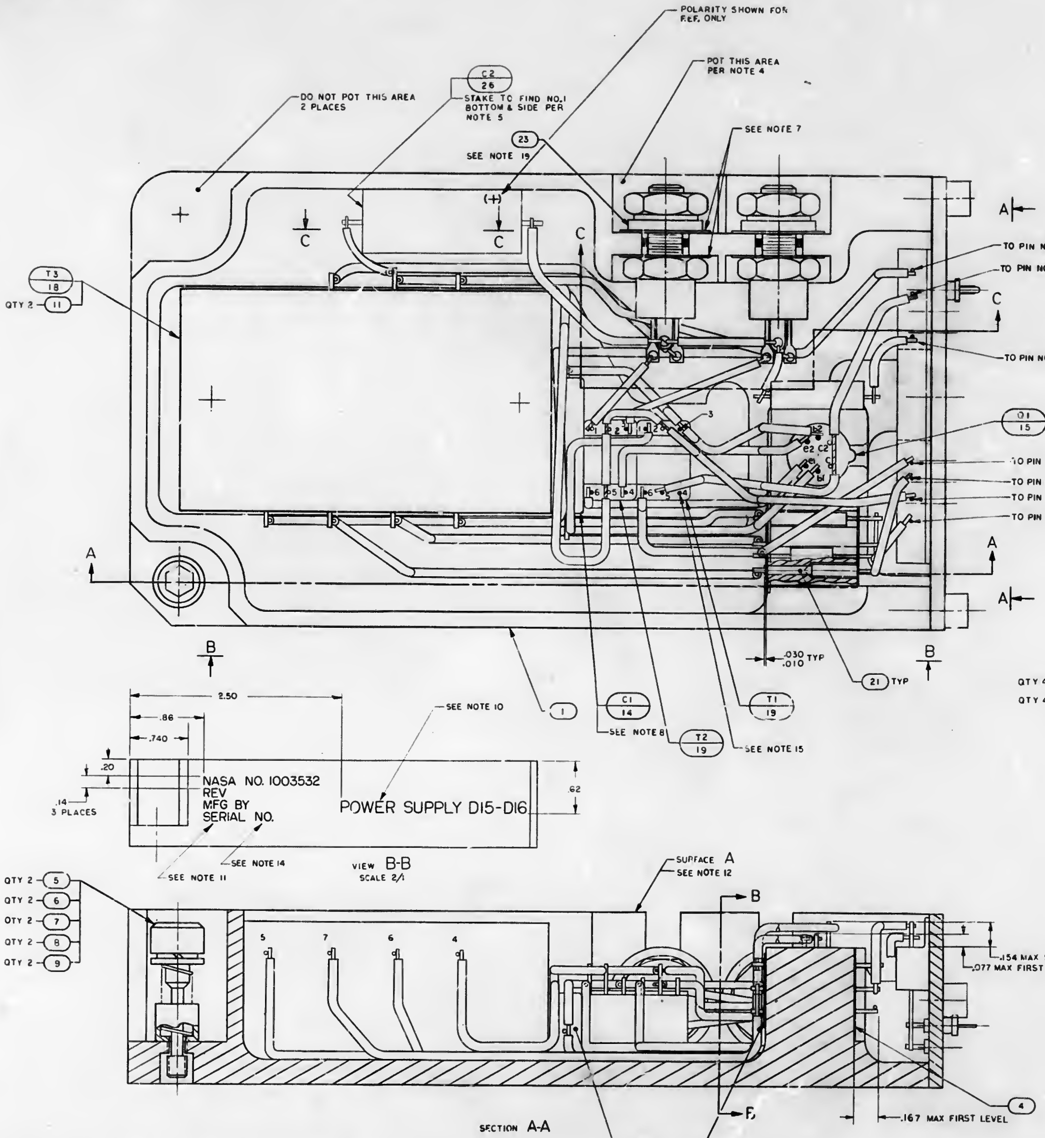
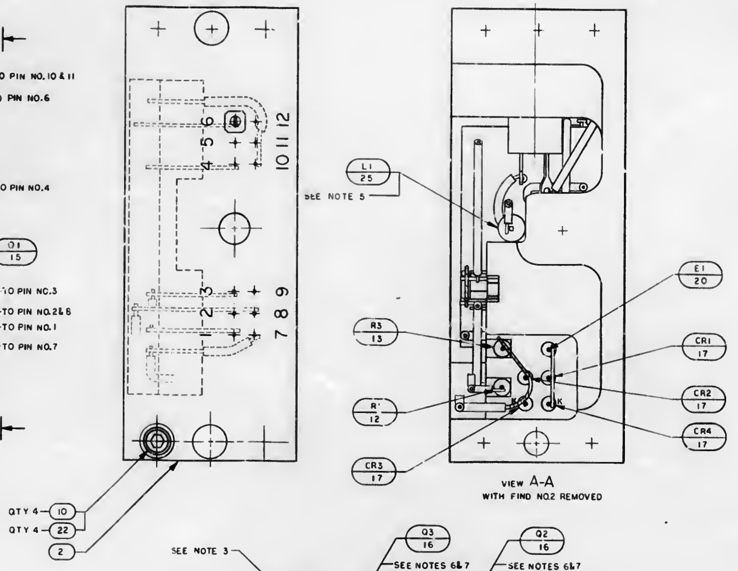
DECODING PLATE
WIREWRAP ASSEMBLY
AGC DSKY, NAV

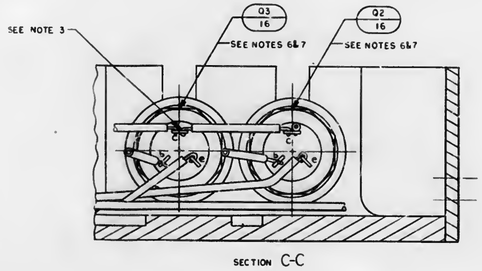
CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003531
SCALE 1/1
WT
SHEET 1 OF 1

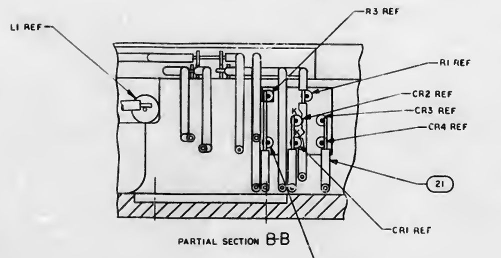
	1003532	F

A	REVISED P
B	REVISED P
C	REVISED P DR
D	REVISED P DR
E	REVISED P DR
F	REVISED P DR





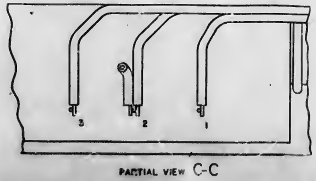




NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002003 AND 1002005
3. SOLDER PER MSFC-PROC-158
4. ENCAPSULATE PER ND 1002002
5. STAKE PER ND 1002004
6. MOUNTING TORQUE OF FIND NO.16 TO BE 8 - 15 IN-LBS
7. NEW MICA WASHERS TO BE INSTALLED EACH TIME FIND 16 IS DISASSEMBLED
8. BOND FIND NOS 19 & 14 TOGETHER & TO FIND NO.1 PER ND 1002004
9. ●BLACK DOT DENOTES LEAD TO BE CUT FOR FIRST LEVEL WIRING
10. MARK .125 HIGH WHITE PER ND 1002019 AND ND 1002122 TYPE II CLASS I
11. MARK .093 HIGH WHITE PER ND 1002019 AND ND 1002122 TYPE II CLASS I
12. POTTING TO BE WITHIN .010 OF SURFACE A
13. ALL VIEWS SHOWN WITH POTTING REMOVED FOR CLARITY
14. SERIALIZE PER ND 1002023
15. PIN 4 TO BE CUT .010 TO .015 FROM SURFACE OF T1 ONLY
16. K DENOTES CATHODE SIDE OF DIODE
17. ✱ DENOTES LENGTH IN FEET
18. VALUES OF FIND NO.13 TO BE DETERMINED AND INSTALLED AT UNIT TEST SELECT R3 FROM CHART A
19. REPLACE WASHER SUPPLIED WITH FIND NO.16 WITH FIND NO.23
20. VALUES OF FIND NO.12 TO BE DETERMINED AND INSTALLED AT UNIT TEST SELECT R1 FROM CHART B

CHART A	CHART B
1006750 -15	1006750 -41
-22	-42
-25	-43
-27	-44
-28	-45
-29	-46
-30	-47
-31	1006750 -48
-32	
-34	
1006750 -36	



	REF	1006163	SCHEMA
	1	1006755-134	CAPACI
	1	1010406-7	COIL, R
	~~2~~	~~1004817~~	~~PIN, L~~
	2	MS15795-308	WASHE
	4	MS15795-303	WASHE
✱	4.3	1006776-22	INSULA
✱	4.7	1006757-13	WIRE, E
	2	1010291-4	TRANSI
	1	1006726	SATUR
	4	1006751	SEMICO
	1	1010269-2	TRANSI
	1	1010376-1	TRANSI
	1	1006793-19	CAPACI
	1	SEE NOTE 18	RESIST
	1	SEE NOTE 20	RESIST
	2	1010477-12	SCREW,
	4	MS16995-9	SCREW
	2	1004592	SPRING
	2	MS35337-79	WASHE
	2	1004546-2	WASHE
	2	MS24585-32	SPRING
	2	1004583	SCREW,
	1	1004595	INSULA
	1	1004594	INSULA
	1	1003450	CONNE
	1	1004577	HOUSIN
	QTY REQD	PART OR IDENTIFYING NO	

LIST OF MATER

NEXT ASSY	USED ON
1003459	
1003458	
1003540	
1003524	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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MAN

POWER
AGC D

CODE IDENT NO. ——
SIZE J
SCALE 4/1
WT

1003532 F 1/2

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 05387	[illegible]	
B	REVISED PER TDRR 05787	[illegible]	
C	REVISED PER TDRR 06953 DR CHK	3/4/64	
D	REVISED PER TDRR 08400 DR CHK R.M.E. J.R.	5/1/64	
E	REVISED PER TDRR 11874 DR CHK RTM	9/13/64	
F	REVISED PER TDRR 12599 DR F. Boudreau CHK RTM	9/21/64	

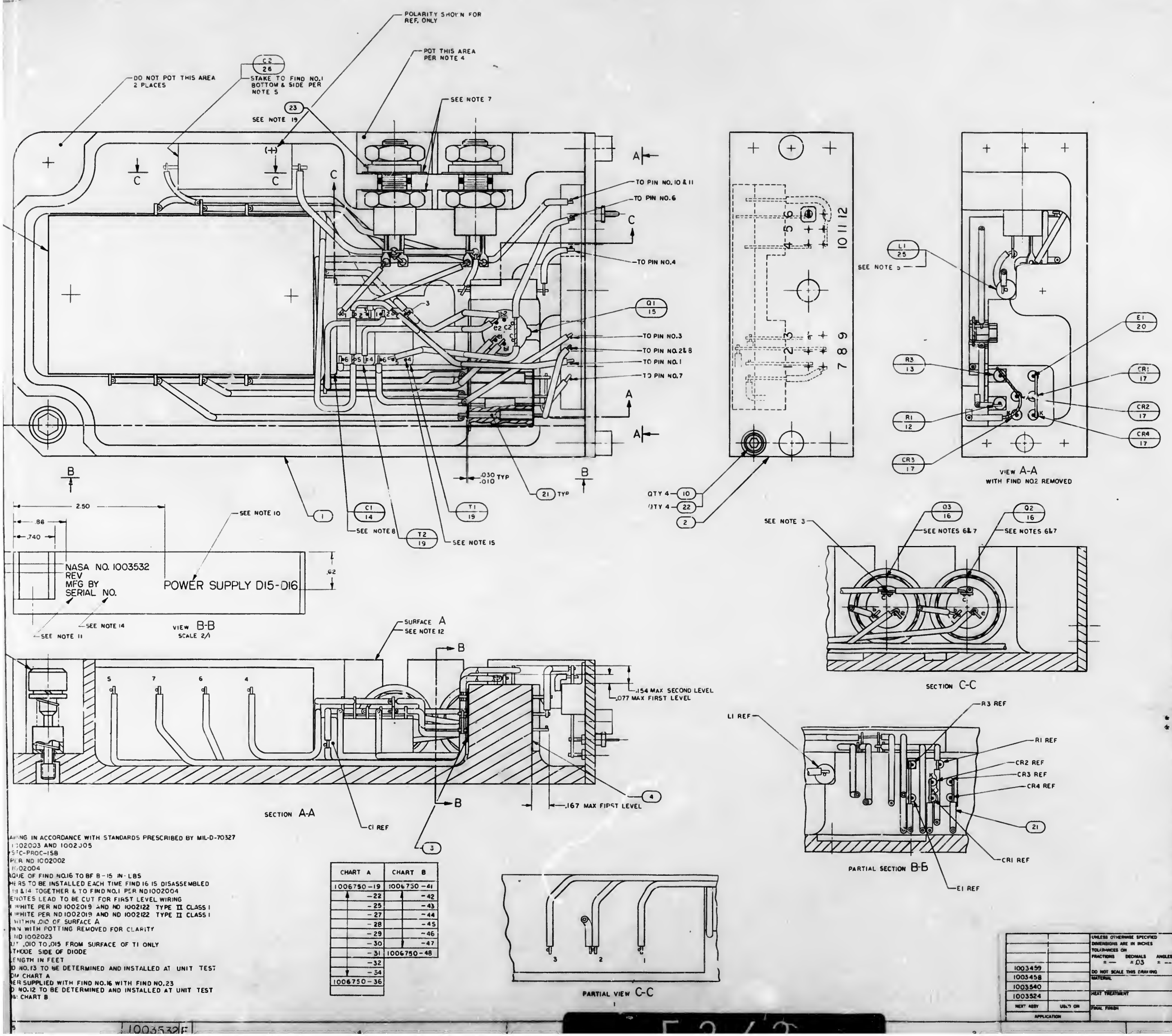

CHART A	CHART B
1006750-19	1006750-41
-22	-42
-25	-43
-27	-44
-28	-45
-29	-46
-30	-47
-31	1006750-48
-32	
-34	
1006750-36	

AWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
1002003 AND 1002005
SFC-PROC-15B
PER ND 1002002
1002004
RQUE OF FIND NO.16 TO BE 8-15 IN-LBS
HERS TO BE INSTALLED EACH TIME FIND 16 IS DISASSEMBLED
1 & 14 TOGETHER & TO FIND NO.1 PER ND1002004
ENOTES LEAD TO BE CUT FOR FIRST LEVEL WIRING
WHITE PER ND 1002019 AND ND 1002122 TYPE II CLASS I
WHITE PER ND 1002019 AND ND 1002122 TYPE II CLASS I
WITHIN .010 OF SURFACE A
WN WITH POTTING REMOVED FOR CLARITY
ND 1002023
UT .010 TO .015 FROM SURFACE OF T1 ONLY
THODE SIDE OF DIODE
LENGTH IN FEET
D NO.13 TO BE DETERMINED AND INSTALLED AT UNIT TEST
OM CHART A
ER SUPPLIED WITH FIND NO.16 WITH FIND NO.23
D NO.12 TO BE DETERMINED AND INSTALLED AT UNIT TEST
OM CHART B

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
	REF	1006163	SCHEMATIC, ELECTRICAL	27
	1	1006755-134	CAPACITOR, FIXED, TANTALUM	26
	1	1010406-7	COIL, RF CHOKE	25
	~~2~~	~~1004817~~	~~PIN, LOCATING~~	~~24~~
	2	MS15795-308	WASHER	23
	4	MS15795-303	WASHER, FLAT	22
*	4.3	1006776-22	INSULATION, SLEEVING	21
*	4.7	1006757-13	WIRE, ELECTRICAL	20
	2	1010291-4	TRANSFORMER, AUDIO	19
	1	1006726	SATURABLE REACTOR	18
	4	1006751	SEMICONDUCTOR DEVICE, DIODE	17
	1	1010269-2	TRANSISTOR, 2 AMP SILICON	16
	1	1010376-1	TRANSISTOR, SILICON	15
	1	1006793-19	CAPACITOR, FIXED, GLASS DIELECTRIC	14
	1	SEE NOTE 18	RESISTOR, FIXED FILM	13
	1	SEE NOTE 20	RESISTOR, FIXED FILM	12
	2	1010477-12	SCREW, FLAT	11
	4	MS16995-9	SCREW, SOCKET HEAD	10
	2	1004592	SPRING, CUP	9
	2	MS35337-79	WASHER, LOCK	8
	2	1004546-2	WASHER, FLAT	7
	2	MS24585-32	SPRING, COIL	6
	2	1004583	SCREW, CAPTIVE	5
	1	1004595	INSULATOR, FRONT	4
	1	1004594	INSULATOR, BACK	3
	1	1003450	CONNECTOR PLATE ASSEMBLY	2
	1	1004577	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003459	
1003458	
1003540	
1003524	

APPLICATION

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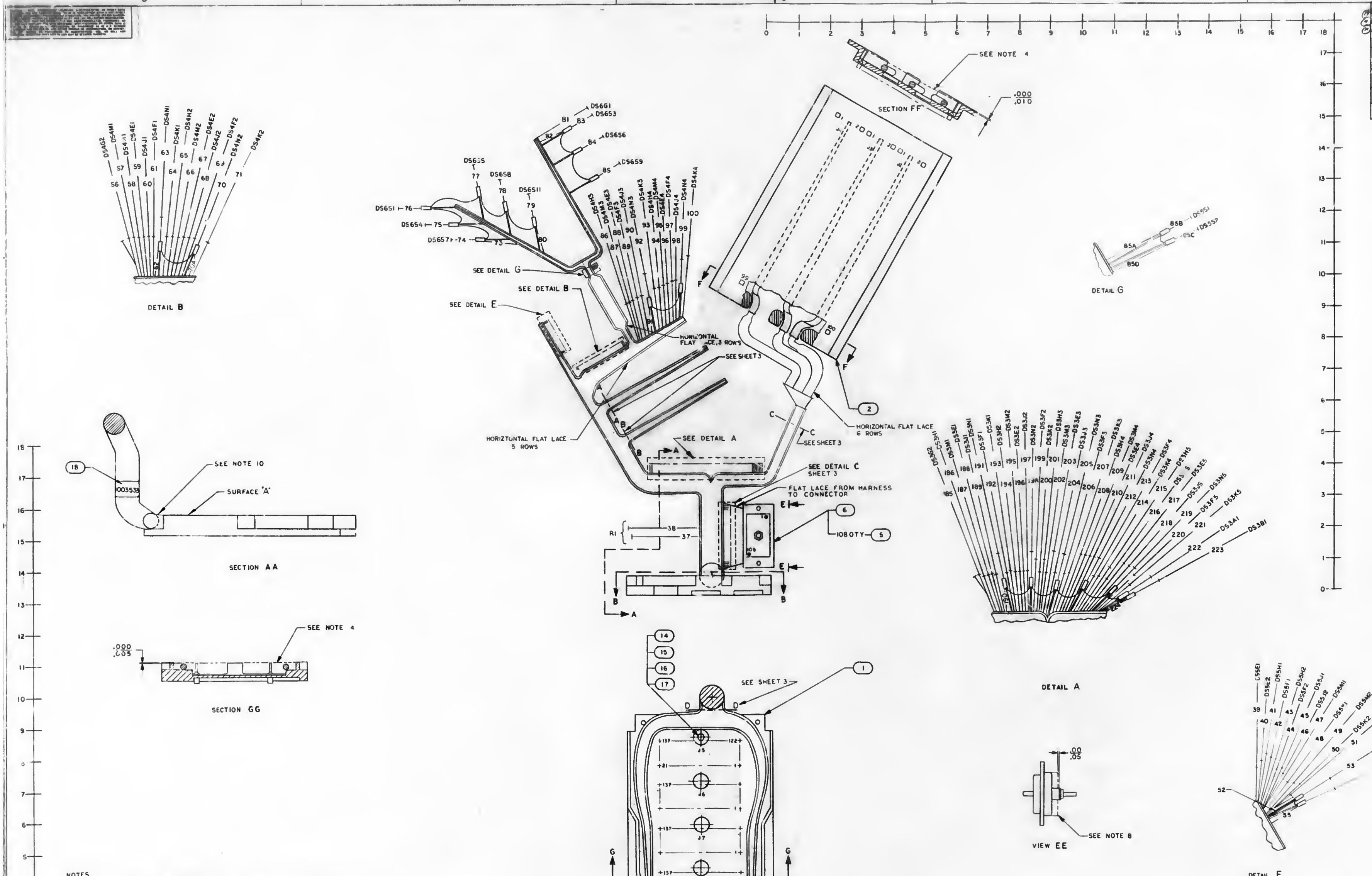
POWER SUPPLY ASSY
AGC DSKY, NAV & MAIN

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003532
SCALE 4/1
WT
SHEET OF

	REVISIONS		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05195	[illegible]	[illegible]
B	REVISED PER TDRR 06050	[illegible]	[illegible]
C	REVISED PER TDRR 07347 DR [illegible] CHK [illegible]	[illegible] 64	[illegible]
D	REVISED PER TDRR [illegible] DR [illegible] CHK R.K.E	1/27/64	[illegible]
E	REVISED PER TDRR 10309 DR [illegible] CHK	10 [illegible] 64	[illegible]
F	REVISED PER TDRR 10739 DR [illegible] CHK [illegible]	[illegible]	RAB
G	REVISED PER TDRR 12094 DR [illegible] CHK [illegible]	[illegible]	[illegible]



NOTES
1. FOR SYMBOLS FABRICATION AND REQD TEST SEE ND1002032
   1A. STRIP ALL LEADS .19
2. MIL-I-23053 CLASS 2, COLOR BLACK, FOR FIND NO.4 SIZE NO. 6
   FOR FIND NO. 3 SIZE NO.4 FOR FIND NO.9 SIZE NO. 10
   FOR FIND NO. 10 SIZE NO. 16
3. SOLDER PER ND1002071
4. ENCAPSULATE INDICATED AREAS PER ND 1002217
5. INTERPRET DRAWING IN ACCORDANCE WITH
   STANDARDS PRESCRIBED BY MIL-D-70327
6. TERMINATE SHLDS AT FIND NO.1 WITHIN HARNESS JUST BEFORE POINT
   OF BREAKOUT WITH .37 OF FIND NO.10
7. *DENOTES LENGTH IN FEET
8. ENCAPSULATE INDICATED AREA USING SILASTIC RUBBER PER ND 1002009 METHOD E
9. *ALL CONNECTIONS TO FIND NO.1 WHEN USING FIND NO.12 TO BE MADE BY WIRE WRAP PER ND1002031
10. FLAT LACE SIDE OF HARNESS TO ALLOW TRUNK TO LIE BELOW SURFACE "A"

FOR LIST OF MATERIALS SEE SHEET 3

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1003524	
NEXT ASSY	USED ON
APPLICATION	

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APPROVAL [illegible]
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible] 26 [illegible] 63

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WIRING HARNESS, BRANCHED
AGC DSKY, NAV

CODE IDENT NO —— SIZE J NASA DRAWING NO. 1003533
SCALE 1/1 WT SHEET 1 OF 3

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	REVISIONS 04829			
	SYM	DESCRIPTION	DATE	APPRO
	A	REVISED PER TDRR 05175		
	B	REVISED PER TDRR 06050		
	C	REVISED PER TDRR 07947 DR C Jensen CHK	16 Nov 64	
	D	REVISED PER TDRR 08016 DR CHK R.E.		
	E	REVISED PER TDRR 10309 DR P. CHK A.R.B.		
	F	REVISED PER TDRR 10739 DR CHK RTM		
	G	REVISED PER TDRR 12594 DR W Brown CHK RTM		

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
*	76	SHLD	30	13	525	
	524				79	*
*	78				493	
	516				83	*
*	84				539	
	557				77	*
*	75				27	
	26				74	*
*	85				13	
	21	SHLD		13	63	*
	64	WHT		12	22	● SEE NOTE 9
●	24	WHT		12	128	
*	126	SHLD		13	6	
●	8	WHT		12	142	
*	140	SHLD		13	19	
*	85C	SHLD		13	371	
●	369	WHT		12	48	
*	53	SHLD		13	363	
●	375	WHT		12	93	
*	92	SHLD		13	379	
	382	SHLD		13	183	*
*	184	SHLD		13	368	
	384	SHLD		13	180	*
	182	WHT		12	428	●
●	423	WHT		12	168	
*	166	SHLD		13	416	
	413	SHLD		13	223	*
*	222	SHLD		13	433	
●	426	WHT		12	121	
*	119	SHLD		13	388	
●	527	WHT		12	200	
*	198	SHLD		13	549	
●	546	WHT		12	214	
*	212	SHLD		13	533	
●	529	WHT		12	154	
*	152	SHLD		13	530	
●	559	WHT		12	135	
*	133	SHLD		13	569	
	562	SHLD		13	70	*
	71	WHT		12	561	●
	396	SHLD		13	99	*
	100	WHT		12	400	●
●	403	WHT		12	50	
*	54	SHLD		13	407	
*	85B	SHLD		13	499	
	512	SHLD		13	191	*
	193	WHT		12	510	●
	502	SHLD		13	205	*
	207	WHT		12	492	●
	489	SHLD		13	219	*
	221	WHT		12	466	●
●	473	WHT		12	173	
*	173	SHLD		13	460	
	471	SHLD		13	159	*
	161	WHT		12	472	●
	482	SHLD		13	143	*
*	144	SHLD		13	[illegible]	
●	458	WHT		12	114	
*	112	SHLD	30	13	454	
	82	WHT	26	11	80	
	73				85D	
	85A				52	
	55				111	
	145				151	
	184A				190	
	224	WHT	26	11	390	
	81	WHT	30	12	51	
	51				106	
	106				146	
	146				185	
	185				[illegible]	●
●	459				107	
	108				457	●
●	452				110	
	109				448	●
●	455				113	
	122				1	●
●	2	WHT	30	12	139	
	323A	WHT	26	11	35A	

* SEE GROUND SHEATH CONNECTION CHART
● INDICATES WIRE WRAP, SOLDER OPTIONAL PER NOTE 3

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	137	WHT	30	12	3	●
●	5				123	
	127				9	●
●	10				138	
	141				11	●
●	12				136	
	124				23	●
●	25				125	
	117				409	●
●	419				118	
	116				420	●
●	422				120	
	129				572	●
●	570				130	
	134				568	●
●	560				131	
	132				558	●
	61				4	●
●	15				59	
	58				7	●
●	20				60	
	57				373	●
●	365				87	
	90				374	●
●	377				88	
	89				378	●
●	380				39	
	42				376	●
●	370				47	
	49				367	●
●	366				41	
	40				395	●
●	399				44	
	49				402	●
●	404				46	
	43				405	●
●	406				95	
	98				401	●
●	398				96	
	97				397	●
●	394				94	
	225A				566	●
●	571				69	
	66				567	●
●	565				67	
	65				564	●
●	563				68	
●	383				86	
	194				555	●
●	554				211	
	209				553	●
●	550				195	
	199				545	●
●	543				210	
	213				542	●
●	541				208	
	196				528	●
●	526				197	
	186				517	●
●	523				189	
	188				522	●
●	518				187	
	192				519	●
●	501				201	
	206				505	●
●	508				203	
	202				503	●
●	507				204	
	217				497	●
●	498				218	
	220				491	●
●	484				216	
	215				485	●
●	411				162	
	178				415	●
●	417				167	
	164				418	●
●	422				181	
	165	WHT	30	12	424	●

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
●	425	WHT	30	12	148	
	177				427	●
●	434				179	
	176				435	●
●	436				165	
	153				552	●
●	537				149	
	147				536	●
●	532				150	
	158				479	●
●	478				157	
	156				476	●
●	474				160	
	155				470	●
●	469				169	
	170				468	●
●	467				174	
	172				464	●
●	462				171	
	116				386	
●	381				295	
	294				440	●
●	441				293	
	298				445	●
●	447				276	
	272				509	●
●	520				296	
	297				495	●
●	514				255	
	252				[illegible]	●
●	313				262	
	263				496	●
●	511				239	
	237				500	●
●	506				33	
	232				494	●
●	488				287	
	241				449	●
●	450				266	
	265				465	●
●	451				249	
	248				466	●
●	461				236	
	234				487	●
●	477				230	
	229				463	●
●	475				235	
	240				547	●
●	551				291	
	288				480	●
●	483				286	
	284				535	●
●	531				280	
	285				518	●
●	544				289	
	290				540	●
●	538				268	
	267				18	●
●	16				275	
	269				14	●
●	7				245	
	242				534	●
●	412				258	
	256				421	●
●	410				281	
	260				429	●
●	364				284	
	277				362	
	362				393	●
●	391				38	
	37	WHT	30	12	361	
	372	WHT	26	11	346	
	302				233	
	231				299	
	305				228	
	227				327	
	306				226	
	225				313	
	314				259	
	257	WHT	26	11	321	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	318	WHT	26	11	254	
	253				324	
	319				278	
	279				325	
	326				247	
	246				329	
	320				244	
	243				317	
	300				287	
	285				311	
	316				292	
	281				309	
	307				250	
	251				312	
	308				274	
	273				301	
	330				271	
	270				323	
	356				28	
	29				349	
	338				30	
	31				352	
	357				359	
	360				354	
	355				35	
	32				344	
	341				36	
	34A				303	
	304				33	
	392				358	
	361				350	
	337				521	
	515				340	
	334				[illegible]	
	465				336	
	310				446	
	444				342	
	339				443	
	442				347	
	351				437	
	438				315	
	336				439	
	387				322	
	328				385	
	389				331	
	333				408	
	414				353	
	348				430	
	431				343	
	345				34	
	[illegible]				318A	
	556				56	
	56				62	
	70A				91	
	328A				362A	
	14A				333A	
	330A				363A	
	34	WHT	26	11	292	

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
85	84	1.75	11
84	83	1.50	
79	78	1.75	
78	77	1.75	
77	76	2.25	
76	75	1.75	
75	74	1.75	
54	53	.75	11

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
			11
63	70	2.00	
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
92	99	2.00	
85B	85C	.75	7
112	119	1.00	11

INTERNAL GND SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
			11
119	126	1.75	
125	133	1.75	
133	140	2.00	
140	143	1.50	
143	144	.75	11

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
152	159	2.00	11
159	166	1.75IN	
166	173	1.75	
173	180	1.75	
180	183	1.50	
			11

INTERNAL GND SHEATH CONNECTIONS

TO	FROM	LENGTH	FIND NO.
183	184	.75	11
191	198	2.00	
198	205	1.75	
205	212	1.75	
212	219	1.75	
219	222	1.50	11

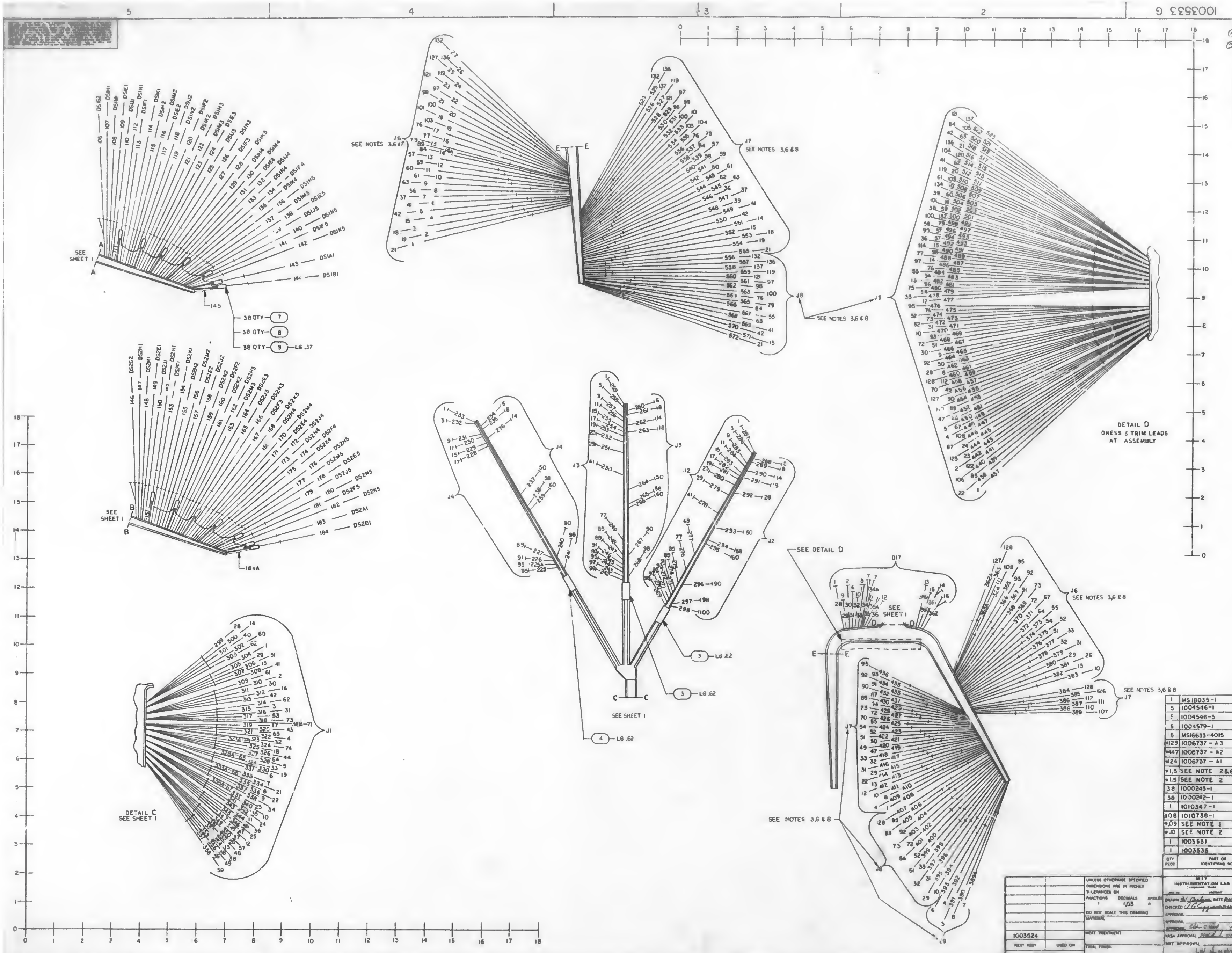
INTERNAL GND SHEATH CONNECTIONS

TO	FROM	LENGTH	FIND NO.
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
222	223	.75	11

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D-70327

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.03 ANGLES ± DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS	MANNED SPACECRAFT CENTER HOUSTON TEXAS
		MATERIAL	DRAWN P. DATE CHECKED APPROVAL APPROVAL APPROVAL	WIRING HARNESS, BRANCHED AGC DSKY, NAV
1003524		HEAT TREATMENT	NASA APPROVAL	CODE IDENT NO —— SIZE J NAS. DRAWING NO 1003533
NEXT ASSY	USED ON	FINAL FINISH	MIT APPROVAL MIT APPROVAL 26 Mar 63	SCALE NONE WT SHEET 2 OF 3
APPLICATION				



LTR	DESCRIPTION	DATE	APPR
A	REVISED PER TDRR 05575	[illegible]	[illegible]
B	REVISED PER TDRR 06050	[illegible]	[illegible]
C	REVISED PER TDRR 07547 DR [illegible] CHK [illegible]	[illegible]	[illegible]
D	REVISED PER TDRR 08016 DR [illegible] CHK [illegible]	[illegible]	[illegible]
E	REVISED PER TDRR 10309 DR [illegible] CHK Q.P.B	[illegible]	[illegible]
F	REVISED PER TDRR 10739 DR [illegible] CK [illegible]	[illegible]	AVB
G	REVISED PER TDRR 12094 DR [illegible] CHK [illegible]	[illegible]	[illegible]

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	MS18035-1	STRAP, CABLE IDENT	18
5	1004546-1	WASHER, FLAT	17
5	1004546-3	WASHER, FLAT	16
5	1004579-1	SCREW, JACKING	15
5	MS16633-4015	RING, RETAINING	14
*129	1006737 - A3	WIRE, ELECTRICAL SHLD AWG 30	13
*447	1006737 - A2	WIRE, ELECTRICAL SOLID AWG 30	12
*24	1006737 - A1	WIRE, ELECTRICAL SOLID AWG 26	11
*1.5	SEE NOTE 2&6	SLEEVING	10
*1.5	SEE NOTE 2	SLEEVING	9
38	1000243-1	FERRULE, ELECTRICAL CONDUCTOR	8
38	1000242-1	FERRULE, ELECTRICAL CONDUCTOR	7
1	1010347-1	CONNECTOR, PLUG	5
108	1010738-1	CONTACT (MALE)	5
*.09	SEE NOTE 2	SLEEVING	4
*.10	SEE NOTE 2	SLEEVING	3
1	1003531	DECODING PLATE WIREWRAP ASSY	2
1	1003535	RELAY MODULE WIREWRAP ASSY	1

LIST OF MATERIALS

1003524	
NEXT ASSY	USED ON

APPLICATION

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FRACTIONS ± DECIMALS ±.03 ANGLES ±
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MATERIAL
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INSTRUMENTATION LAB
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DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL
APPROVAL
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, NAV

CODE IDENT NO. ——— SIZE J NASA DRAWING NO. 1003533
SCALE 1/1 WT SHEET 3 OF 3

[redacted]

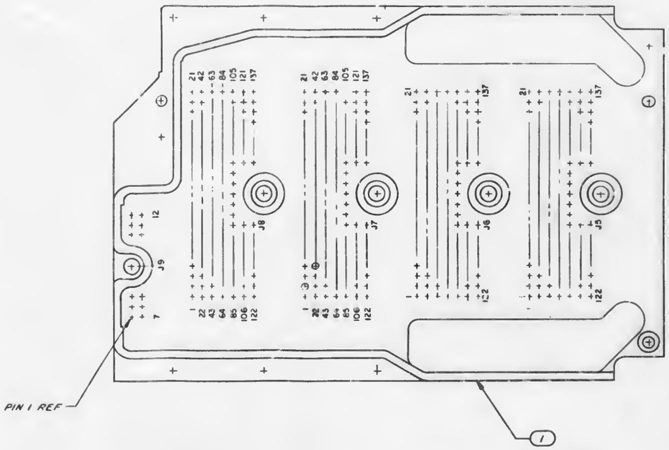
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 04921	[illegible]	[illegible]
B	REVISED PER TDRR 06050	[illegible]	[illegible]
C	REVISED PER TDRR 07347 DR B [illegible] CHK [illegible]	[illegible]	[illegible]
D	REVISED PER TDRR 10737 DR [illegible] CHK R.E.E.	[illegible]	[illegible]

SIGNAL	WIRING LEGEND				
	FROM	COLOR	AWG	FIND NO.	TO
EV250	J5-71	YELLOW	30	2	J5-53
	J5-53				J5-35
	J5-35				J5-11
	J5-11				J5-56
	J5-56				J5-80
	J5-80				J5-102
	J5-102				J5-83
	J5-83				J6-102
	J6-102				J6-83
	J6-83				J6-80
	J6-80				J6-35
	J6-35				J6-53
	J6-53				J6-56
	J6-56				J6-11
	J6-11				J6-71
	J6-71				J6-46
	J6-46				J7-71
	J7-71				J7-56
	J7-56				J7-80
	J7-80				J7-102
	J7-102				J7-83
	J7-83				J7-35
	J7-35				J7-11
	J7-11				J7-27
	J7-27				J8-71
	J8-71				J8-56
	J8-56				J8-80
	J8-80				J8-83
	J8-83				J8-35
	J8-35				J8-11
EV250	J6-11				J9-10
JM 147	*J5-62				J6-62
SD 326	*J5-105				J5-16
	J5-16				J6-105
	J6-105				J6-82
	J6-82				J6-16
	J6-16				J7-105
	J7-105				J7-16
SD 326	J7-16				J8-105
WD327	J5-120				J5-78
	J5-78				J6-120
	J6-120				J6-81
	J6-81				J6-78
	J6-78				J7-120
	J7-120				J7-78
WD327	J7-78				J8-120
JM169	*J5-104				J6-104
JM170	*J5-39				J6-39
JM148	*J5-58				J6-58
JM171	*J5-99				J6-99
JM149	*J5-14				J6-14
JM133	*J5-38				J7-38
	J7-38				J7-5
JM132	*J5-77				J7-77
	J7-77				J8-9
JM172	*J5-12				J6-12
JM150	*J5-74				J6-74
JM131	*J5-30				J7-30
	J7-30				J6-5
JM163	*J5-34				J6-34
	J6-34				J7-34
	J7-34				J8-34
JM141	*J5-75				J6-75
	J6-75				J7-75
	J7-75				J8-75
DS181	*J5-96				J5-91
JM173	*J5-50				J6-50
JM157	*J5-8				J6-8
JM129	*J5-5				J5-45
	J5-45				J7-45
WD328	*J5-87				J7-28
	J7-28				J7-48
	J7-48				J7-88
WD328	J7-88				J7-3
WD306	*J5-85				J7-23
	J7-23	YELLOW	30	2	J7-89

* INDICATES WIREWRAP MUST BE ON FIRST LEVEL

SIGNAL	WIRING LEGEND				
	FROM	COLOR	AWG	FIND NO.	TO
WD302	J7-89	YELLOW	30	2	J7-123
	J7-123				J7-127
SD210	*J5-2				J5-65
	J5-65				J5-125
	J5-125				J5-69
	J5-69				J5-66
	J5-66				J5-25
	J5-25				J6-125
	J6-125				J6-65
	J6-65				J6-25
	J6-25				J6-69
	J6-69				J6-66
	J6-66				J6-2
	J6-2				J7-125
	J7-125				J7-66
	J7-66				J7-69
	J7-69				J7-25
	J7-25				J7-2
	J7-2				J8-125
	J8-125				J8-66
	J8-66				J8-69
	J8-69				J8-25
SD210	J8-25				J8-2
JM134	*J5-20				J7-20
	J7-20				J7-9
JM130	*J5-26				J6-9
	J6-9				J7-26
WD312	*J5-1				J5-107
	J5-107				J5-126
	J5-126				J5-111
WD312	J5-111				J6-43
JM123	*J5-106				J6-122
	J6-122				J7-106
JA208	*J5-24				J5-86
	J5-86				J5-124
	J5-124				J5-109
	J5-109				J5-68
	J5-68				J5-7
	J5-7				J6-124
	J6-124				J6-109
	J6-109				J6-86
	J6-86				J6-68
	J6-68				J6-24
	J6-24				J6-7
	J6-7				J7-124
	J7-124				J7-109
	J7-109				J7-68
	J7-68				J7-24
	J7-24				J7-7
	J7-7				J8-124
	J8-124				J8-109
	J8-109				J8-68
	J8-68				J8-24
JA208	J8-24				J8-7
JM128	*J5-9				J6-20
	J6-20				J8-20
JM127	*J6-108				J6-38
	J6-38				J8-38
JM126	*J6-77				J7-108
	J7-108				J8-77
JM125	*J5-108				J6-30
	J6-30				J8-30
DS381	*J7-13				J7-6
JM124	*J6-26				J8-5
	J8-5				J8-26
JM122	*J5-122				J6-106
	J6-106				J8-106
JM142	*J7-62				J8-62
JM165	*J7-39				J8-39
JM143	*J7-58				J8-58
JM166	*J7-99				J8-99
JM144	*J7-14				J8-14
JM167	*J7-12				J8-12
JM150	*J7-74				J8-74
DS281	*J6-91				J6-96
JM168	*J7-50				J8-50
JM146	*J7-8				J8-8
JM164	*J7-104				J8-104
WD239	*J5-134				J5-116
	J5-116	YELLOW	30	2	J5-17

SIGNAL	WIRING LEGEND				
	FROM	COLOR	AWG	FIND NO.	TO
WD239	J5-17	YELLOW	30	2	J6-134
	J6-134				J6-116
	J6-116				J6-17
	J6-17				J7-134
	J7-134				J7-116
	J7-116				J7-17
	J7-17				J8-134
	J8-134				J8-17
	J8-17				J8-116
WD239	J8-116				J9-1
JM135	J5-46				J8-103
800Lo	*J5-114				J5-117
	J5-117				J6-114
	J6-114				J6-117
	J6-117				J7-114
	J7-114				J7-117
	J7-117				J8-114
	J8-114				J8-117
	J8-117				J8-133
800Lo	J8-133				J9-2
KAJ-01	J5-94				J5-113
KAJ-04	J7-94				J7-113
KAJ-02	J6-94				J8-94
	J8-94				J8-40
KAJ-03	J8-113				J8-81
WD331	*J6-111	YELLOW	30	2	J6-126



NOTES
1. WIRE PER ND1002031
2. AR DENOTES AS REQUIRED
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
4.
5. ROUTE WIRES PER DWG NO. 1004571

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION
AR	1006732-1	WIRE, ELECTRICAL
1	1004152	PLATE, RELAY MODULE

LIST OF MATERIALS

NEXT ASSY	USED ON
1003533	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
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FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN [illegible] DATE 6.16.63
CHECKED R. Edwards 14.SEP.63
APPROVAL [illegible] 24/[illegible]
APPROVAL [illegible] 11/5/63
APPROVAL
NASA APPROVAL W.J. [illegible] 10-3-63
MIT APPROVAL
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PLATE, WIRE WRAP ASSEMBLY
RELAY HOUSING
AGC DSKY NAV

CODE IDENT NO —
SIZE J
NASA DRAWING NO. 1003535
SCALE 2/1
WT
SHEET 1 OF 1

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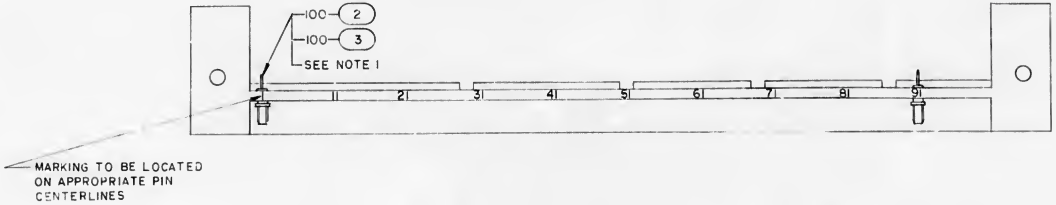
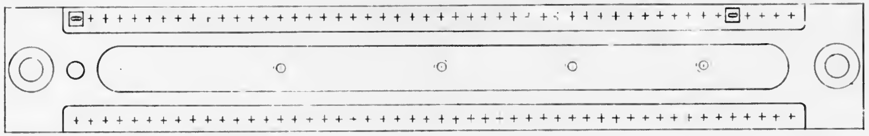
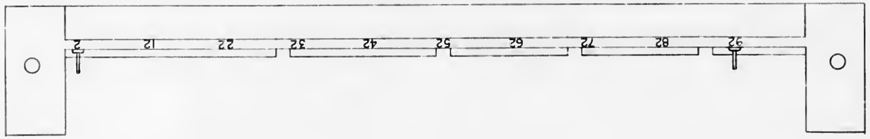
1003536

REVISIONS 03621			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 07500 DR Fumlham CHK Jea	4/7/64	HaC







NOTES
1. INSTALL FIND NO. 2 AND FIND NO. 3 PER ND1002136
2. MARK .06 HIGH WHITE CHARACTERS PER ND1002019
3. INTEPPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
100	1006782-1	CONTACT, WRAPOST, MALE	3
100	1006775	INSULATOR, WRAPOST, MALE	2
1	1004146	HEADER, DECODING MODULE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003530	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
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FINAL FINISH

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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT

DRAWN Barnett DATE 12 SEP 63
CHECKED A. F. Bozzi 8 SEP 63
APPROVAL T. J. Lawrence 24 Sep 63
APPROVAL W. B. Evans 2 Oct 63
NASA APPROVAL W. J. Rhine 10-3-63
M.I.T. APPROVAL
MIT. APPROVAL W. Kopp 3 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER ASSEMBLY
DECODING MODULE
AGC DSKY NAV & MAIN

CODE IDENT NO.	SIZE	NASA DRAWING NO.
—	D	1003536

SCALE 2/1 WT SHEET 1 OF 1

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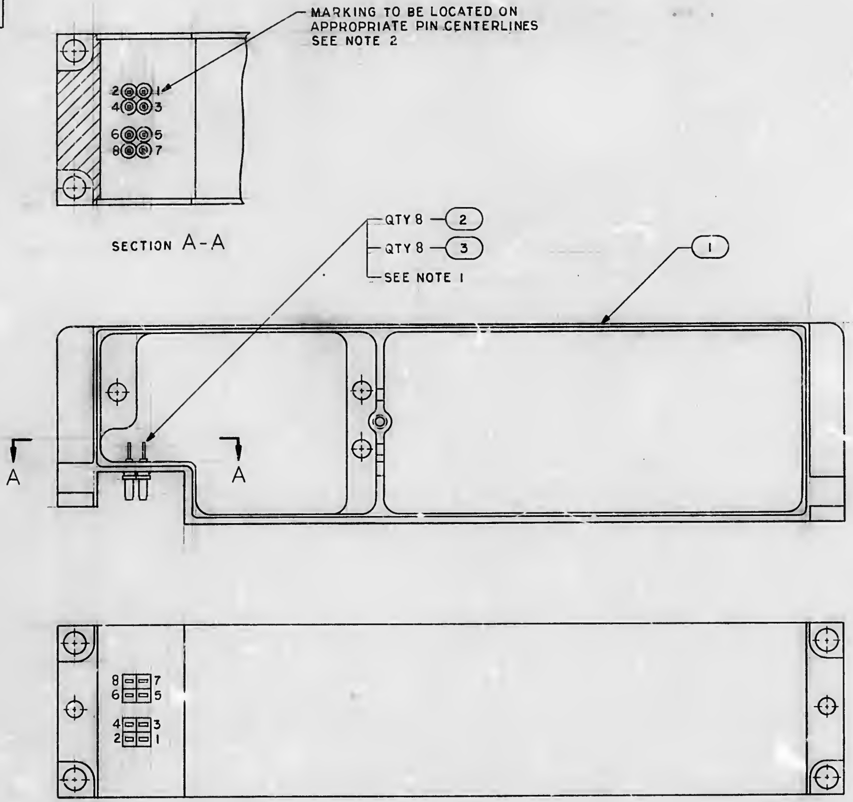
SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS 03453			


MARKING TO BE LOCATED ON APPROPRIATE PIN CENTERLINES SEE NOTE 2
2 1
4 3
6 5
8 7
SECTION A-A
QTY 8 ②
QTY 8 ③
SEE NOTE 1
①
A
A
8 7
6 5
4 3
2 1

NOTES
1. INSTALL FIND NO. 2 AND FIND NO. 3 PER ND1002136
2. MARK .06 HIGH WHITE CHARACTERS APPROX AS SHOWN PER ND1002019
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
8	1006782-1	CONTACT, WRAPOST, MALE	3
8	1006775	INSULATOR, WRAPOST, MALE	2
1	1004548	HEADER HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003528	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN K.L. Olsen DATE 3 Sep 63
CHECKED R.E. Burk 17 Sep 63
APPROVAL W.B. Turner 25 Sep 63
APPROVAL D. Hall 20 Sept 63
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL L. Hazel 9/26/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEADER ASSEMBLY
AGC OSCILLATOR

CODE IDENT NO. —— SIZE D NASA DRAWING NO. 1003537
SCALE 2/1 WT SHEET 1 OF 1

MASTER

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1003538 F

REVISIONS 03631

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04502	[illegible]	
B	REVISED PER TDRR 05789	[illegible] 64	
C	REVISED PER TDRR 08017 DR H Matty CHK	4/24/64	
D	REVISED PER TDRR 08408 DR D.A. Clermont CHK A.R.B.	5/7/64	
E	REVISED PER TDRR 11489 DR R. Edwards CHK J.F.L.	8/3/64	
F	REVISED PER TDRR 19999 DR J.P. Leonard CHK R.H.E.	6/18/65	

OPERATIONAL DESIGN PARAMETERS	MAX FREQUENCY DEVIATION ALLOWED AND/OR REQUIREMENT AS APPLICABLE	COMMENT	CONDITION
ITEM: 1 FREQUENCY	2,048,000 ± 5 PP 10^8		+40°C ± 1°C AMBIENT REFERENCED TO ET_2 TIME
ITEM: 2 FREQUENCY SETABILITY	± 1 PP 10^8		
ITEM: 3 FREQUENCY RANGE ADJUSTMENT	$^{+2}_{-5}$ PP 10^6 MINIMUM		REFERENCED TO NOMINAL FREQUENCY, ITEM 1
ITEM: 4 AGING	+ 1 PP 10^9/24 HOURS, LESS THAN	1. SPECIFIED OSCILLATOR AGING RATE SHALL INCLUDE AGING OF CRYSTAL AND/OR AGING OF ANY OTHER COMPONENTS OR MATERIALS ASSOCIATED WITH THE OSCILLATOR AND SO MEASURED AT THE OUTPUT TERMINALS.	A. MEASURED AT ANY POINT ± 0.1°C OVER THE AMBIENT TEMPERATURE RANGE OF 0° TO +55°C. (+55°C TO +70°C: 2PP 10^9/24 HOURS). B. MEASURED OVER ANY 20 DAY PERIOD FOLLOWING WARM UP. THIS TEST SHALL BE PERFORMED FOLLOWING A 3 WEEK NON OPERATIONAL PERIOD. THE AGING RATE SHALL ALSO BE WITHIN THE "+" 1 PP 10^9 SPECIFIED IN ITEM 4 FOLLOWING A 24 HOUR WARM UP. (a) NO FREQUENCY ADJUSTMENTS SHALL BE ALLOWED. (b) FREQUENCY MEASURED SHALL BE STABILIZED AFTER REQUIRED WARM UP PERIOD.
ITEM: 5 TEMPERATURE COMPENSATION CONTROL 1. +25°C TO +55°C 2. +55°C TO +25°C 3. 0°C TO +70°C	 1 PP 10^7 LESS THAN 1 PP 10^7 LESS THAN 5 PP 10^7 LESS THAN	1. TEST TIME SHALL ALLOW FOR COMPLETE TEMPERATURE SATURATION OF OSCILLATOR COMPONENTS AND MATERIALS. 2. DESIGN OF OSCILLATOR SHALL PROVIDE FOR TEMPERATURE COMPENSATION CONTROL AND/OR OVEN CONTROL AS REQUIRED BY RAYTHEON. RESPECTIVE CRYSTALS AS REQUIRED SHALL ALSO BE PROVIDED AND SPECIFIED.	AMBIENT TEMPERATURE
ITEM: 6 REPEATABILITY WITH TEMPERATURE COMPENSATION	1 PP 10^8 LESS THAN 1 PP 10^7 LESS THAN	1. THIS TEST SHALL BE PERFORMED FOLLOWING A 3 WEEK NON OPERATIONAL PERIOD. THE AGING RATE SHALL ALSO BE WITHIN THE "+" 1 PP 10^9 SPECIFIED IN ITEM 4 FOLLOWING A 24 HOUR WARM UP. 2. NO FREQUENCY ADJUSTMENTS SHALL BE ALLOWED. 3. FREQUENCY MEASURED SHALL BE STABILIZED AFTER REQUIRED WARM UP PERIOD.	AFTER 24 HOURS WARM UP PERIOD AFTER 2 HOURS WARM UP PERIOD
28 VOLT DC ± 4 VOLTS	5PP 10^8		40°C

NOTES

1. VENDOR SHALL SUPPLY THE FOLLOWING SPECIFIED COMPONENTS OF ASSEMBLY DWG 1003526 R1, R2, R3, R4, R5, R6, R7, R8, R9, R17, R31, RT2, CR3, C1, C2 AND Y1
2. THESE COMPONENTS SHALL BE SO SELECTED, PRE AGED AND TESTED TO ASSURE COMPLIANCE WITH THE REQUIREMENTS OF TABLE I WHEN UNITED WITH THE REMAINDER OF THE COMPONENTS OF SCHEMATIC DWG 1006140 AND THE KIT PARTS SHALL BE ASSEMBLED IN COMPONENT HOLDER 1004560 1004659, 1004840 PER MECHANICAL ASSEMBLY DRAWINGS 1003526 & 1003818 LESS POTTING. KIT PARTS TO BE TEMPORARILY ATTACHED
3. THE COMPONENT LEADS OF THE KIT PARTS SHALL NOT BE NICKED OR SCRATCHED WITHIN .200 OF COMPONENT BODY
4. COMPONENTS SUPPLIED SHALL BE INDIVIDUALLY IDENTIFIED BY ITS RESPECTIVE REFERENCE DESIGNATION AND BY THE CRYSTAL SERIAL NUMBER
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

REFERENCES

1. SCHEMATIC 1006140
2. MECHANICAL ASSY DWG 1003526 & 1003818
3. COMPONENT HOLDER 1004560, 1004659, 1004840

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
R5, R7, R8, R1, R2, R3, R6, R17, R31	9	1006750	RES NOMINAL ± 2 % 1/4 W	13
Y1	1	1006847	XTAL	12
~~R8~~	~~1~~	~~1006750-32~~	~~RES 1K ± 2 % 1/4 W~~	~~11~~
~~R7~~	~~1~~	~~1006750-51~~	~~RES 6.2K ± 2 % 1/4 W~~	~~10~~
~~R5~~	~~1~~	~~1006750-60~~	~~RES 15K ± 2 % 1/4 W~~	~~9~~
R4, R9	2	1006750-84	RES 150 K ± 2 % 1/4 W	8
~~R2, R31~~	~~2~~	~~1006750-62~~	~~RES 18K ± 2 % 1/4 W~~	~~7~~
~~R1, R3, R6~~	~~3~~	~~1036750~~	~~RES NOMINAL ± 2 % 1/4 W~~	~~6~~
RT2	1	1006712	THERMISTOR NOMINAL	5
~~RT1~~	~~1~~	~~1006715-1~~	~~THERMISTOR~~	~~4~~
CR3	1	1006700-1	DIODE 47UUF ± 2% 4V	3
C2	1	1006793	CAP NOMINAL ± 2%	2
C1	1	1006793-89	CAP 1200 UUF ± 2 % 300 V	1

LIST OF MATERIALS

1003818	
1003526	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN R. Falcetta DATE 25 SEPT 63
CHECKED R. Edwards 26 Sep 63
APPROVAL W.E. Turner 2 Oct 63
APPROVAL E.J. Duggan [illegible]
NASA APPROVAL [illegible] 10-7-63
MIT APPROVAL
MIT APPROVAL W. Kupfer 3 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

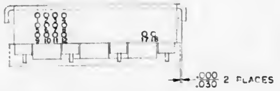
KIT ASSEMBLY
AGC OSCILLATOR

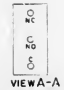
CODE IDENT NO. 80230 SIZE D NASA DRAWING NO. 1003538
SCALE WT SHEET 1 OF 1

[illegible]

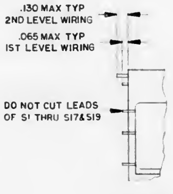
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05185		WK
B	REVISED PER TDRR 05791		WK
C	SUPERSEDED PER TDRR 05563		WK
D	CHANGED PER TDRR 07070 DR CHK		
E	CHANGED PER TDRR 08015 DR CHK		

REVISIONS 04735

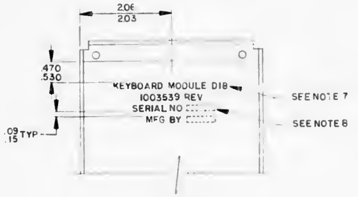




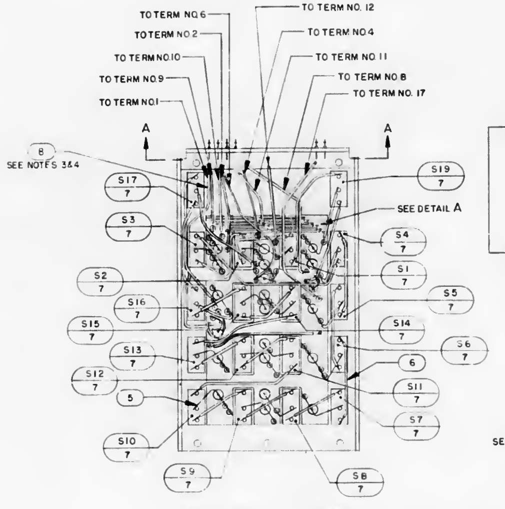
VIEW A-A
SHOWN WITH POTTING REMOVED
SCALE 2/1
18 PLACES

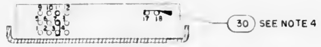


DETAIL B
SCALE 2/1

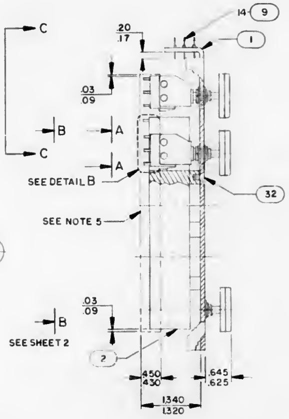


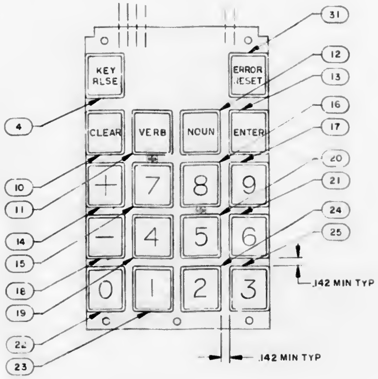
VIEW C-C

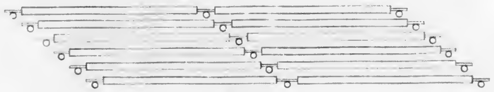




SECTION A-A







DETAIL A
FOR CLARITY ONLY
SCALE 4/1

INACTIVE, SUPERSEDED BY 1003549

NOTES.
1. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 WHEN USING FIND NO. 5
2. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
3 USE FIND NO 8 & 30 FOR ALL TERMINAL CONNECTIONS
4 SOLDER FIND NO 8 & 30 BOTH ENDS PER MSFC-PROC-158
5 ENCAPSULATE MODULE PER ND 1002217 TO DIMENSIONS SHOWN
6. AR DENOTES AS REQUIRED
7 MARK .12 HIGH WHITE PER ND1002019
8 SERIALIZE PER ND1002023
9 QQ-W-343 TYPE S AWG 24 TIN COATING 'A'
10 STAKE COMPONENTS TO FIND NO.2 PER ND1002004.
11. BRUSH COAT THIS SURFACE PER ND1002009 TO A MINIMUM HEIGHT OF .015 ABOVE COMPONENT LEADS AND FEEDTHRUS

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
╳	1006150	SCHEMATIC	REF
1	1004605	INSULATOR, PLATE	39
1	1006752	TRANSISTOR, SILICON, TYPE NPN	38
1	1010406-7	COIL, RF, CHOKE	37
1	1006777-24	CAPACITOR, FIXED, CERAMIC	36
1	1006750-56	RESISTOR, FIXED FILM 1/4W ± 2%	35
6	1006750-1	RESISTOR, FIXED FILM 1/4W ± 2%	34
2	1006750-32	RESISTOR, FIXED FILM 1/4W ± 2%	33
2	MS 35200-12	SCREW, FLAT HEAD	32
1	1004127-19	BUTTON, KEYBOARD	31
AR	SEE NOTE 9	WIRE, ELECTRICAL	30
1	1006755-79	CAPACITOR-6.8uf, 35V, 10%	29
45	1006751	DIODE	28
19	1006755-57	CAPACITOR-0.1uf, 35V, 10%	27
2	1006750-39	RESISTOR, FIXED FILM 1/4 W ± 2%	26
1	1004127-16	BUTTON, KEYBOARD	25
1	1004127-15	BUTTON, KEYBOARD	24
1	1004127-14	BUTTON, KEYBOARD	23
1	1004127-13	BUTTON, KEYBOARD	22
1	1004127-12	BUTTON, KEYBOARD	21
1	1004127-11	BUTTON, KEYBOARD	20
1	1004127-10	BUTTON, KEYBOARD	19
1	1004127-9	BUTTON, KEYBOARD	18
1	1004127-8	BUTTON, KEYBOARD	17
1	1004127-7	BUTTON, KEYBOARD	16
1	1004127-6	BUTTON, KEYBOARD	15
1	1004127-5	BUTTON, KEYBOARD	14
1	1004127-4	BUTTON, KEYBOARD	13
1	1004127-3	BUTTON, KEYBOARD	12
1	1004127-2	BUTTON, KEYBOARD	11
1	1004127-1	BUTTON, KEYBOARD	10
14	1006764-9	TERMINAL, FEEDTHRU	9
AR	1010416-21	WIRE, ELEC., STRANDED, INSULATED	8
18	1006821	SWITCH, PUSH	7
AR	1006776-21	INSULATION, SLEEVING	6
AR	1006757-1	WIRE, ELEC., .010 × .020	5
1	1004127-18	BUTTON, KEYBOARD	4
AR	1006757-13	WIRE, ELEC. .020 DIA	3
[illegible]	1004156	BLOCK, COMPONENT	2
1	1004532	PANEL, FRONT	1

LIST OF MATERIALS

1003459	
NEXT ASSY	USED ON
APPLICATION	

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DRAWN DATE 6 NOV 63
CHECKED 7 NOV 63
APPROVAL
APPROVAL 15 Nov 63
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

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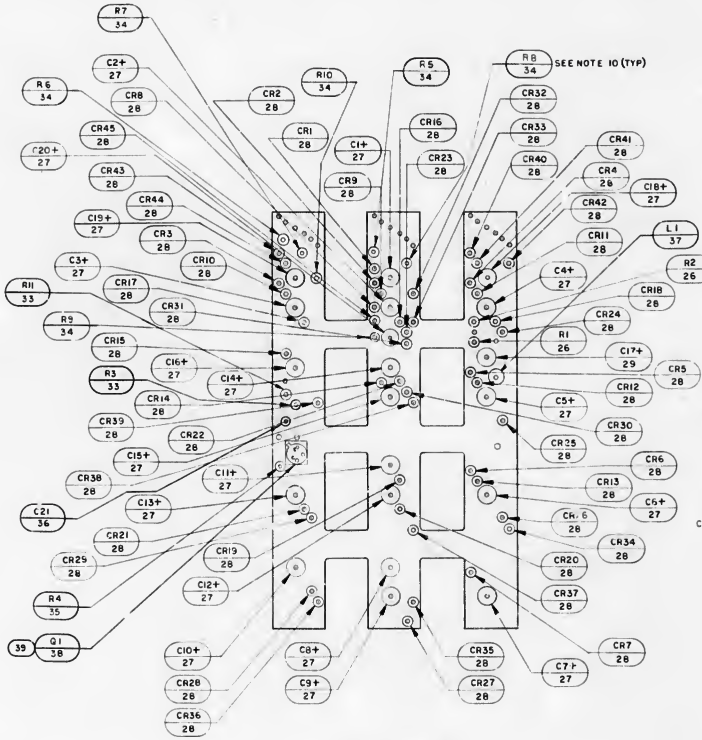
KEYBOARD MODULE D18
ASSEMBLY
AGC, DSKY, MAIN

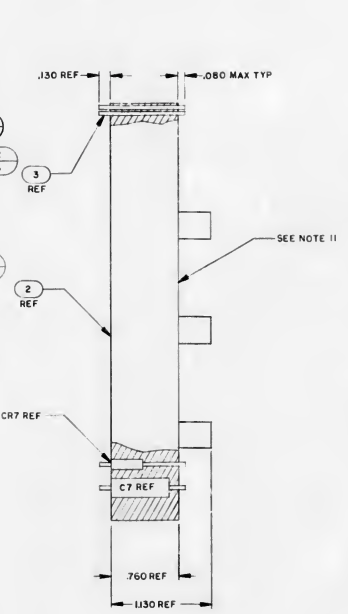
CODE IDENT NO —
SIZE E
NASA DRAWING NO 1003539
SCALE 1/1
WT
SHEET 1 OF 2

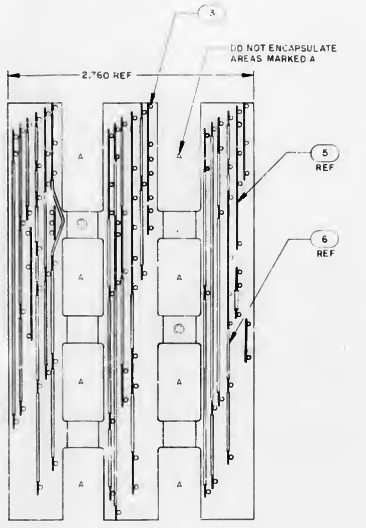
[illegible]

REVISIONS 06725			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05185		WK
B	REVISED PER TDRR 05791		WK
C	SUPERSEDED PER TDRR 05563		WK
D	CHANGED PER TDRR 07070 DR CHK	12 Mar 64	
E	CHANGED PER TDRR 08015 DR CHK	4/27/64	



PARTIAL VIEW B-B
SHOWN BEFORE ASSEMBLY
OF FIND NO. 7&1





CATHODES (FIND 28) THIS SIDE
TYP 45 PLACES

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
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MIT APPROVAL

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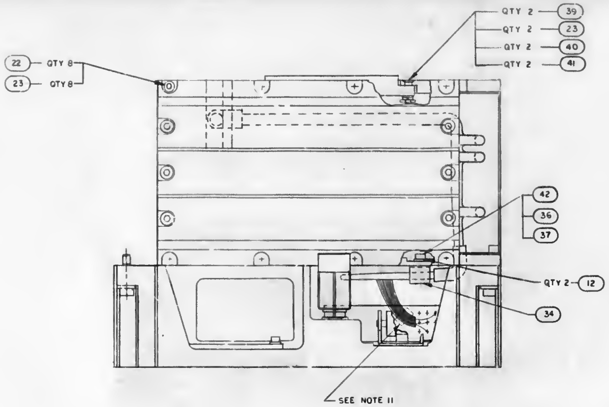
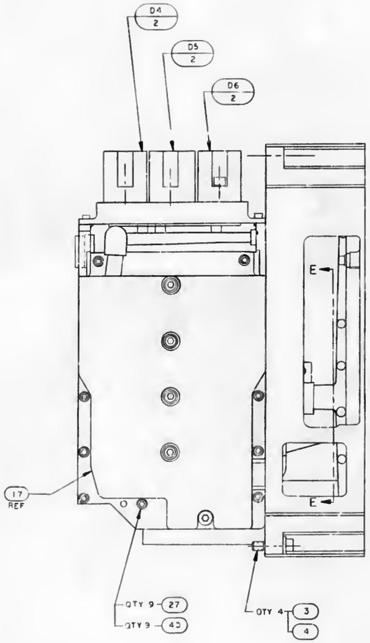
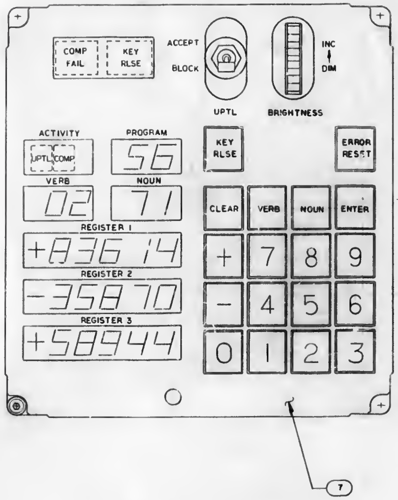
KEYBOARD MODULE D18
ASSEMBLY
AGC, DSKY, MAIN

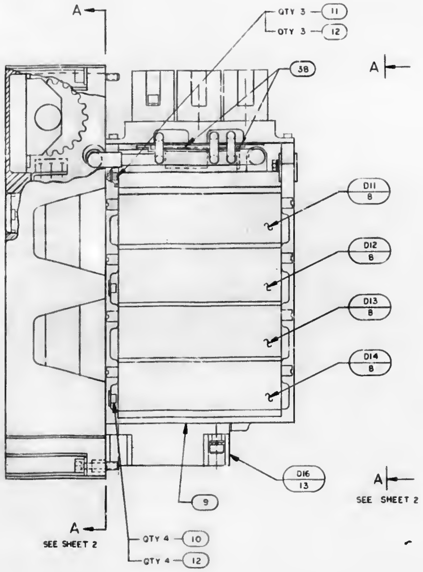
CODE IDENT NO
SIZE E
NASA DRAWING NO 1003539
SCALE 2/1
WT
SHEET 2 OF 2

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05503	12/30/63	
B	REVISED PER TDRR 05644	1/9/64	
C	REVISED PER TDRR 07829 DR CHK	4/14/64	
D	REVISED PER TDRR 10613 DR CHK R.H.S.		
E	REVISED PER TDRR 10610 DR CHK	9/29/	
F	REVISED PER TDRR 12312 DR CHK		
G	REVISED PER TDRR 2313 DR CHK	9/9/64	
H	REVISED PER TDRR 12316 DR CHK	9/4/64	









NOTES

1. SOLDER PER ND 1002071
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
3. MIL-I-631 TYPE F FORM U a, GRADE a, . CLASS I, CATEGORY I, AWG SIZE NO. 24
4. BOND FIND NO. 28 TO FIND NO. 16 & FIND NO. 1 TO FIND NO. 15 PER ND1002004
5. MARK .09 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS I APPROX WHERE SHOWN
6. * DENOTES LENGTH IN FEET
7. SECURE FIND NO. 44 USING MIL-S-22473B
8. ENCAPSULATE PER ND1002217
9. SERIALIZE PER ND 1002023
10. REMOVE LOCK WASHER FROM FIND NO. 19 ADJUST FIND NO. 19 TO ACHIEVE 2°- 3° BACKOFF ON FIND NO. 19 BRIGHTNESS STOP
11. SECURE HARNESS IN INDICATED AREA BY STAKING PER ND1002004
13. FIND NO. 43 TO BE USED FOR IDENTIFICATION OF PART NO. 1003400 & ASSOCIATED DASH NO.

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION

LIST OF MATERIALS

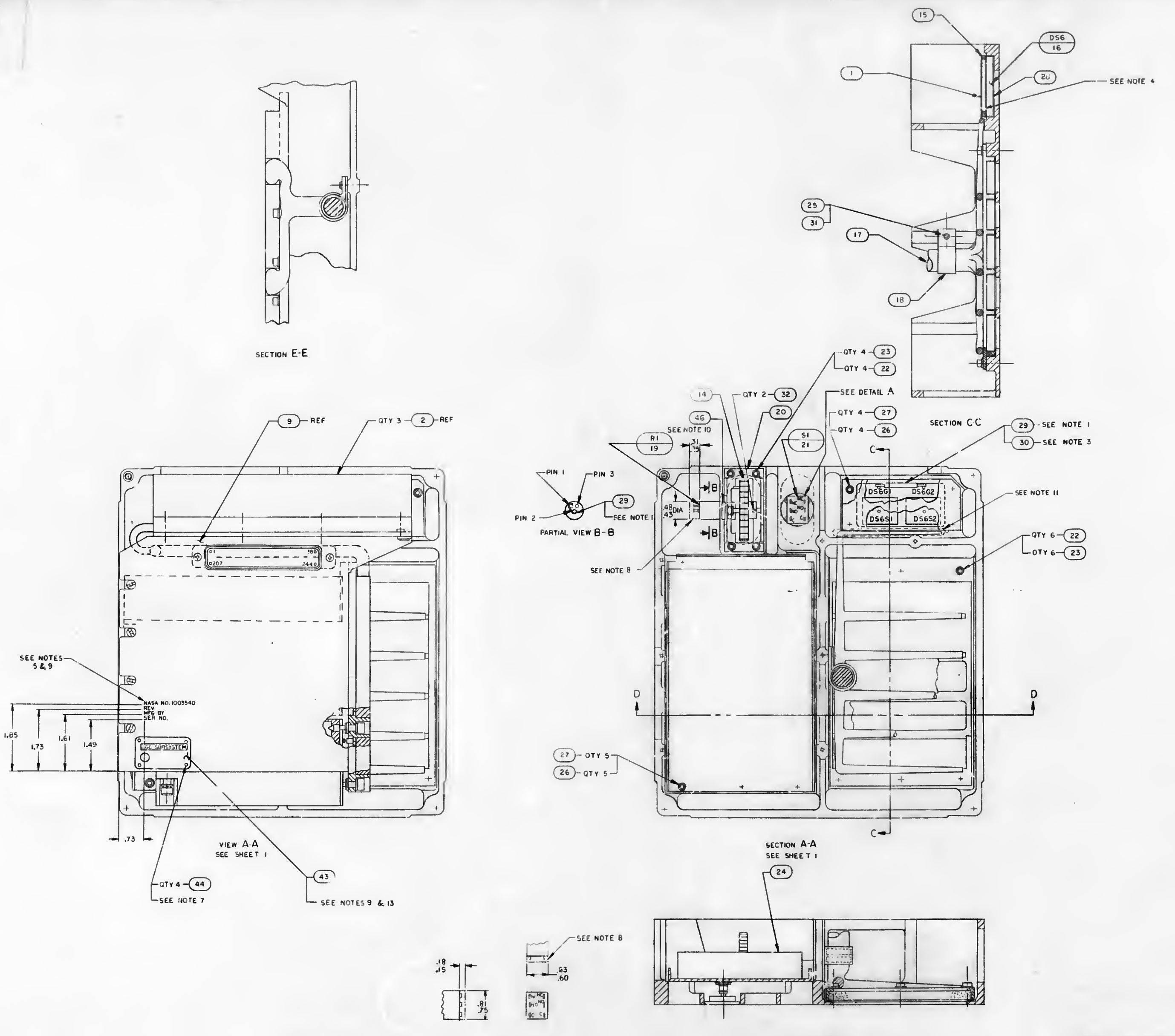
	1003400	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.02 ANGLES ± DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS
NEXT ASSY	USED ON	MATERIAL	DRAWN DATE 31 OCT 63
APPLICATION		HEAT TREATMENT	CHECKED 5 DEC 63
		FINAL FINISH	APPROVAL APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC KEYBOARD & DISPLAY
MAIN PANEL

NASA APPROVAL	CODE IDENT NO	SIZE	NASA DRAWING NO.
MIT APPROVAL	—	J	1003540
MIT APPROVAL	SCALE 1/1	WT	SHEET 1 OF 2

SYM	DESCRIPTION	DATE	APPROVAL
	TDRR 05178 REVISIONS		
A	REVISED PER TDRR 05563	[illegible]	[illegible]
B	REVISED PER TDRR 05644	[illegible]	[illegible]
C	REVISED PER TDRR 07829 DR [illegible] CHK [illegible]	4/8/64	[illegible]
D	REVISED PER TDRR 10613 DR R.D. [illegible] CHK [illegible] RTM	9/3/64	[illegible]
E	REVISED PER TDRR 10610 DR [illegible] CHK [illegible] RTM	9/[illegible]/64	[illegible]
F	REVISED PER TDRR 12312 DR R. [illegible] CHK [illegible] RTM	10/1/64	[illegible]
G	REVISED PER TDRR 12313 DR P. [illegible] CHK [illegible] RTM	10/9/64	[illegible]
H	REVISED PER TDRR 12316 DR [illegible] CHK [illegible] RTM	11/4/64	[illegible]



DETAIL A

SECTION D-D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1004644	WASHER, KNURLED	46
9	NAS 620-4	WASHER, FLAT	45
4	MS16200-1	SCREW, PAN HEAD	44
1	1004628	PLATE, IDENT	43
1	MS16995-19	SCREW, SOCKET HEAD	42
2	MS35337-78	WASHER, LOCK	41
2	MS35200-17	SCREW, FLAT HEAD	40
2	MS35649-44	NUT, PLAIN	39
* 1.5	MIL-T-713	LACING, CORD	38
1	MS35649-64	NUT, PLAIN	37
1	MS35338-79	WASHER, LOCK	36
~~1~~	~~MS16995-17~~	~~SCREW, CAP, SOCKET HEAD~~	~~35~~
1	MS25281-4	CLAMP, CABLE	34
~~2~~	~~MS25281-6~~	~~CLAMP, CABLE~~	~~33~~
2	MS51053-213	SCREW, SET	32
1	MS15795-307	WASHER, FLAT	31
AR	SEE NOTE 3	SLEEVING	30
AR	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	29
1	1004649	INSULATOR, FRONT	28
18	MS16995-10	SCREW, CAP, SOCKET HEAD	27
9	MS15795-304	WASHER, FLAT	26
1	MS35216-40	SCREW, PAN HEAD	25
1	1003549	KEYBOARD MODULE, D18	24
20	MS15795-303	WASHER, FLAT	23
18	MS16995-9	SCREW, CAP, SOCKET HEAD	22
1	1006820	SWITCH, TOGGLE	21
1	1004648	BRACKET, POT	20
1	1006736	RESISTOR, VARIABLE	19
1	MS25281-12	CLAMP, CABLE	18
1	1003478	WIRING HARNESS	17
1	1006814	INDICATOR, DIGITAL DISPLAY	16
1	1003543	GASKET & FRAME ASSY	15
1	1003473	THUMB WHEEL ASSY	14
1	1003532	POWER SUPPLY ASSY	13
9	MS15795-305	WASHER, FLAT	12
3	MS16995-17	SCREW, SOCKET HEAD	11
4	MS16995-16	SCREW, SOCKET HEAD	10
1	1004569	HOUSING, RELAY MODULE	9
4	1003098	RELAY MODULE ASSY	8
1	1004151	HOUSING, FRONT PANEL	7
~~2~~	~~1010477-25~~	~~SCREW, FLAT HEAD~~	~~6~~
~~2~~	~~1004276~~	~~SPACER, SPECIAL~~	~~5~~
4	MS15795-308	WASHER, FLAT	4
4	1004545	SCREW, CAPTIVE	3
3	1003530	COMPONENT ASSY	2
1	1004588	INSULATOR, INDICATOR DISPLAY	1

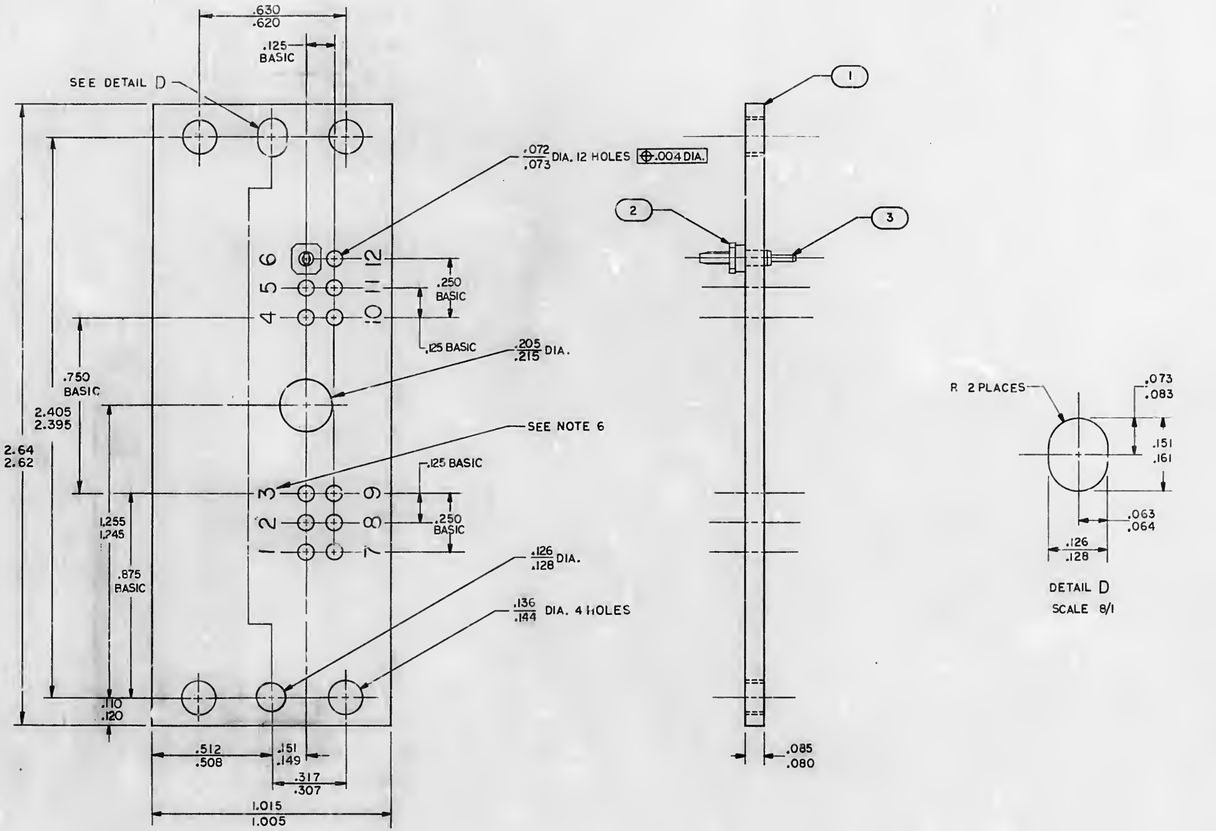
LIST OF MATERIALS

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.02 ANGLES ± DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINAL FINISH	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DRAWN [illegible] DATE 31 OCT 63 CHECKED A. R. Bogni 5DEC63 APPROVAL APPROVAL [illegible] NASA APPROVAL [illegible] MIT APPROVAL MIT APPROVAL [illegible]	MANNED SPACECRAFT CENTER HOUSTON, TEXAS AGC KEYBOARD & DISPLAY MAIN PANEL CODE IDENT NO. —— SIZE J NASA DRAWING NO. 1003540 SCALE 1/1 WT SHEET 2 OF 2
APPLICATION				

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS 05/78

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05640	7 JAN 64	



DETAIL D
SCALE 8/1

NOTES:

1. MATERIAL: AL, 6061-T6 PER QQ-A-327, TEMPER T6
2. REMOVE BURRS & SHARP EDGES
3. ANODIZE PER MIL-A-8625, TYPE I, DYED BLACK
4. INSTALL FIND NO. 2 AND NO. 3 PER ND1002136
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
6. MARK BOTH SIDES .06 HIGH WHITE PER ND1002019 AND ND1002122, TYPE II, CLASS I AND LOCATE MARKING APPROX AS SHOWN

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
12	1006782-1	CONTACT, WRAPOST, MALE	3
12	1006775	INSULATOR, WRAPOST, MALE	2
1	1003541-1	PLATE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003450	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL: SEE NOTE 1
HEAT TREATMENT: NONE
FINAL FINISH: SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN G.A. Bishop DATE 15 OCT 63
CHECKED A. R. Bogni 25 NOV 63
APPROVAL
APPROVAL E. J. Duggan 12-16-63
NASA APPROVAL 12/11/63
MIT APPROVAL
MIT APPROVAL 12/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONNECTOR PLATE
POWER SUPPLY
AGC DSKY NAV & MAIN

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003541
SCALE 4/1
WT —
SHEET 1 OF 1

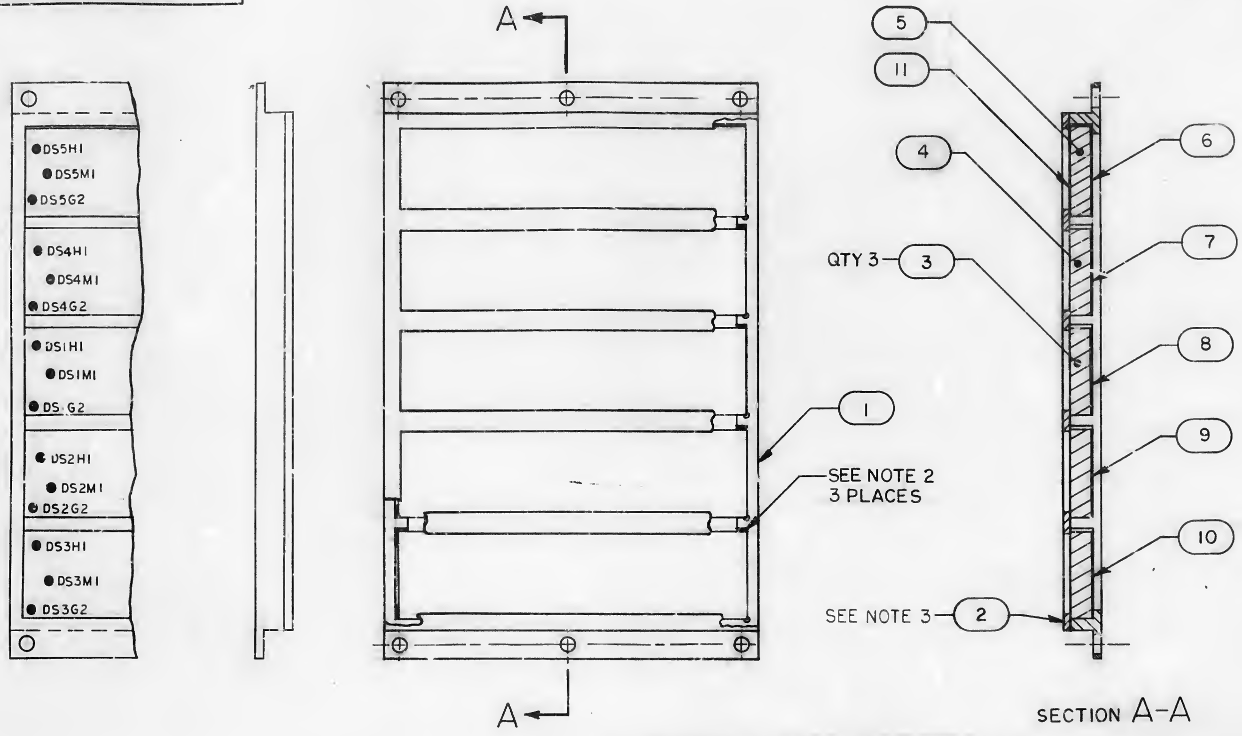
MASTER

4 3 2 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1003542	C

REVISIONS 04486			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05190	17 Dec 63	EPK WK
B	REVISED PER TDRR 06014	29 Jan 64	JFW EPK 2/4/64
C	REVISED PER TDRR 12768 DR J.P. Leonard CHK [illegible] RTM	9/29/64	R.F.B.



WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
DS1A1	WHITE	30	12	DS1C1
DS2A1	↑	↑	↑	DS2C1
DS3A1				DS3C1
DS1G1				DS1G2
DS2G1				DS2G2
DS3G1				DS3G2
DS4G1	↓	↓	↓	DS4G2
DS5G1	WHITE	30	12	DS5G2

NOTES

1. ~~BOND FIND NOS 6,7, 8,9 & 10 TO FIND NOS 3,4 & 5 PER ND1002004~~
2. MOUNT FIND NOS 3,4 & 5 FLUSH TO FIND NO.1 APPLYING ND1002004 AS SHOWN
3. BOND FIND NO.2 TO FIND NO. 1 PER ND1002150
4. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
5. SOLDER PER ND1002071
6. WIRE PER ND 1002032 STRIP .19 AND TIN LEADS
7. * DENOTES LENGTH IN FEET

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
* 3.0	1006737-A2	WIRE, ELEC, SOLID AWG 30	12
1	1004590	INSULATOR, FRONT PROGRAM DISPLAY	11
1	1004129	INSULATOR, REGISTER 3 DISPLAY	10
1	1004128	INSULATOR, REGISTER 2 DISPLAY	9
1	1004126	INSULATOR, REGISTER 1 DISPLAY	8
1	1004148	INSULATOR, VERB-NOUN DISPLAY	7
1	1004147	INSULATOR, PROGRAM DISPLAY	6
1	1006818	INDICATOR, DIGITAL DISPLAY	5
1	1006817	INDICATOR, DIGITAL DISPLAY	4
3	1006813	INDICATOR, DIGITAL DISPLAY	3
1	1004580	GASKET, E/L FRAME	2
1	1004568	FRAME, ELECTROLUMINESCENT	1

LIST OF MATERIALS

1003546	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN D.Q. Clements DATE 7 OCT. 63
CHECKED J.R. Bogni 29 OCT 63
APPROVAL K. Jensen OCT 30/63
APPROVAL Eldon C Hall 1 Nov 63
NASA APPPOVAL
MIT APPROVAL
MIT APPROVAL W Kupfer 5 Nov 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GASKET & FRAME ASSY

AGC DSKY MAIN

CODE IDENT NO. ——— SIZE C NASA DRAWING NO. 1003542
SCALE 1/1 WT SHEET 1 OF 1

4 3 2 1

[illegible]

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05187	[illegible]	[illegible]
B	REVISED PER TDRR 06060	[illegible]	[illegible]
C	INACTIVE PER TDRR 10610 DR [illegible] CHK [illegible]	[illegible]	[illegible]

WIRING LEGEND

FROM	COLOR	AWG	FIND NO.	TO
J5-102	WHITE	30	2	J5-83
J5-83				J5-80
J5-80				J5-56
J5-56				J5-53
J5-53				J5-71
J5-71				J5-11
J5-11				J5-35
J5-35				J6-102
J6-102				J6-83
J6-83				J6-80
J6-80				J6-56
J6-56				J6-53
J6-53				J6-71
J6-71				J6-46
J6-46				J6-11
J6-11				J6-35
J6-35				J7-102
J7-102				J7-83
J7-83				J7-80
J7-80				J7-35
J7-35				J7-11
J7-11				J7-56
J7-56				J7-71
J7-71				J7-27
J7-27				J8-71
J8-71				J8-56
J8-56				J8-11
J8-11			1	J8-35
J8-35				J8-80
J8-80				J8-83
J8-83				J9-10
J5-46				J8-103
J8-105				J7-16
J7-16				J7-82
J7-82				J7-105
J7-105				J6-16
J6-16				J6-82
J6-82				J6-105
J6-105				J5-16
J5-16				J5-82
J5-82				J5-105
J5-105				J5-85
J7-68				J7-109
J7-109				J7-24
*J7-7				J7-68
*J5-104				J6-104
*J5-39				J6-39
*J5-58				J6-58
*J5-99				J6-99
*J5-62				J6-62
*J5-4				J6-14
*J5-38				J7-38
J7-38				J7-5
*J5-77				J7-77
J7-77				J8-9
*J5-12				J6-12
*J5-74				J6-74
*J5-30				J7-30
J7-30				J6-5
*J5-34				J6-34
J6-34				J7-34
J7-34				J8-34
*J5-75				J6-75
J6-75				J7-75
J7-75				J8-75
*J5-50				J6-50
*J5-8				J6-8
*J5-5				J5-45
J5-45				J7-45
*J6-91				J6-96
*J5-96				J5-91
*J5-65				J6-125
J6-125				J6-69
J6-69				J6-66
J6-66	WHITE	30	2	J6-25

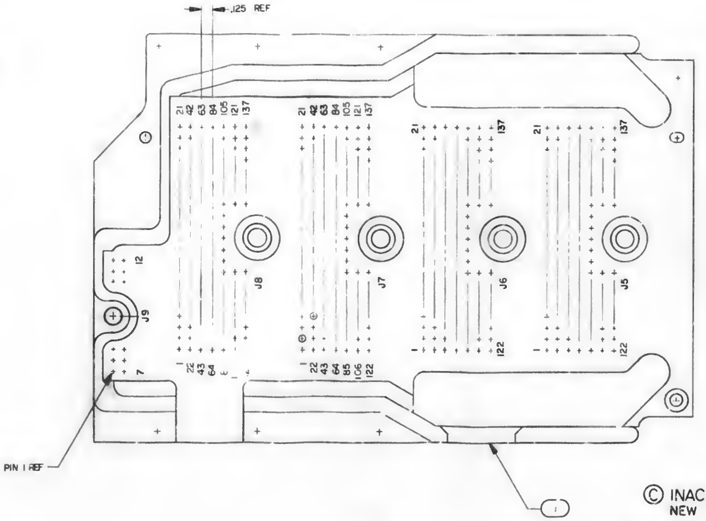
* INDICATES WIREWRAP MUST BE ON FIRST LEVEL

WIRING LEGEND

FROM	COLOR	AWG	FIND NO.	TO
J6-25	WHITE	30	2	J6-2
J6-2				J8-125
J8-125				J8-69
J8-69				J8-66
J8-66				J8-25
J8-25				J8-2
*J5-20				J7-20
J7-20				J7-9
*J5-26				J6-9
J6-9				J7-26
*J5-106				J6-122
J6-122				J7-106
*J7-127				J7-89
J7-89				J7-23
J7-23				J8-105
*J5-86				J6-124
J6-124				J6-109
J6-109				J6-68
J6-68				J6-24
J6-24				J6-7
J6-7				J8-124
J8-124				J8-109
J8-109				J8-68
J8-68				J8-24
J8-24				J8-7
*J5-9				J6-20
J6-20				J8-20
*J6-108				J6-38
J6-38				J8-38
*J6-77				J7-108
J7-108				J8-77
*J5-108				J6-30
J6-30				J8-30
*J6-26				J8-26
J8-26				J8-5
*J5-122				J6-106
J6-106				J8-106
*J5-136				J5-57
J5-57				J6-57
J6-57				J6-132
J6-132				J7-136
J7-136				J7-57
J7-57				J8-136
*J7-74				J8-74
*J7-13				J7-6
*J7-50				J8-50
*J7-8				J8-8
*J7-104				J8-104
*J5-134				J5-116
J5-116				J5-17
J5-17				J6-134
J6-134				J6-116
J6-116				J6-17
J6-17				J7-134
J7-134				J7-116
J7-116				J7-17
J7-17				J8-134
J8-134				J8-116
J8-116				J8-17
J8-17				J9-1
*J7-39				J8-39
*J7-58				J8-58
*J7-99				J8-99
*J7-14				J8-14
*J7-12				J8-12
*J5-114				J5-117
J5-117				J6-114
J6-114				J6-117
J6-117				J7-114
J7-114				J7-117
J7-117				J8-114
J8-114				J8-117
J8-117				J8-133
J8-133				J9-2
*J7-62	WHITE	30	2	J8-62

WIRING LEGEND

FROM	COLOR	AWG	FIND NO.	TO
J5-94	WHITE	30	2	J5-113
J7-94				J7-113
J6-94				J8-94
J8-94				J8-40
J8-113				J8-81
*J7-28				J7-48
J7-48				J7-58
J7-88				J8-118
J8-118				J7-115
J7-115				J7-40
J7-40				J7-118
J7-118				J6-115
J6-115				J6-40
J6-40				J6-118
J6-118				J5-115
J5-115				J5-40
J5-40				J5-118
J5-118	WHITE	30	2	J5-87



Ⓒ INACTIVE AFTER SYSTEM NO. 7 FOR NEW PROCUREMENT USE 1003479

NOTES

1. WIRE PER ND1002031
2. AR DENOTES AS REQUIRED
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
4. ROUTE WIRES PER 1004575

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	1006732	WIRE, ELECTRICAL	2
1	1004584	PLATE, RELAY MODULE	1

LIST OF MATERIALS

1003546	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

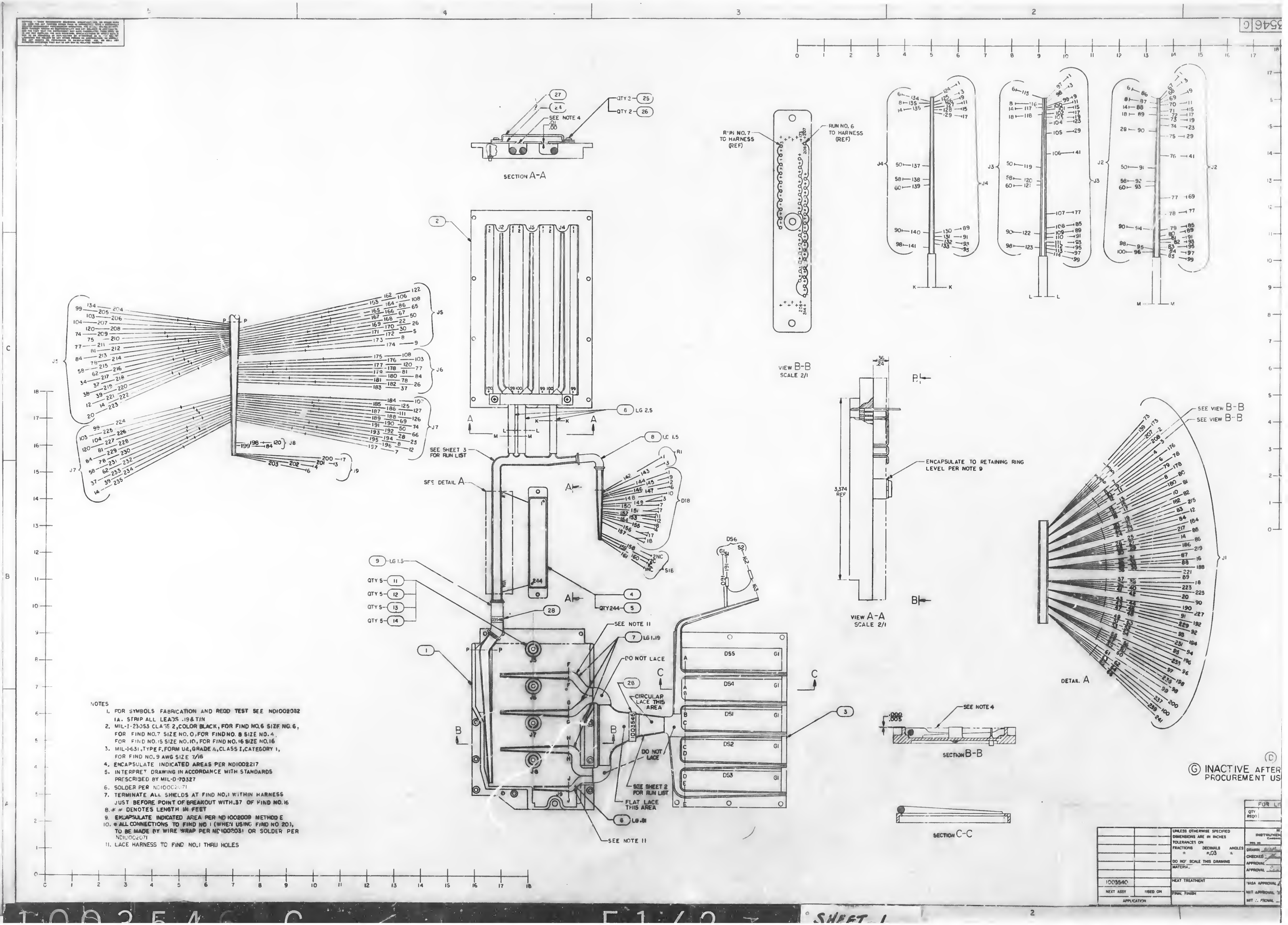
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
SIT APPROVAL
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONNECTOR PLATE
WIRE WRAP ASSY., RELAY MODULE
AGC DSKY MAIN

CODE IDENT. NO. —
SIZE E
NASA DRAWING NO. 1003544
SCALE NONE
WT
SHEET 1 OF 1



NOTES

1. FOR SYMBOLS FABRICATION AND REQD TEST SEE ND1002082
   1A. STRIP ALL LEADS .19 & TIN
2. MIL-I-23053 CLASS 2, COLOR BLACK, FOR FIND NO.6 SIZE NO.6, FOR FIND NO.7 SIZE NO. 0, FOR FIND NO. 8 SIZE NO.4, FOR FIND NO.15 SIZE NO.10, FOR FIND NO.16 SIZE NO.16
3. MIL-I-631, TYPE F, FORM U2, GRADE A, CLASS I, CATEGORY 1, FOR FIND NO. 9 AWG SIZE 7/16
4. ENCAPSULATE INDICATED AREAS PER ND1002217
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
6. SOLDER PER ND1002071
7. TERMINATE ALL SHIELDS AT FIND NO.1 WITHIN HARNESS JUST BEFORE POINT OF BREAKOUT WITH .37 OF FIND NO.16
8. * * DENOTES LENGTH IN FEET
9. ENCAPSULATE INDICATED AREA PER ND1002009 METHOD E
10. ● ALL CONNECTIONS TO FIND NO 1 (WHEN USING FIND NO 20), TO BE MADE BY WIRE WRAP PER ND1002031 OR SOLDER PER ND1002071
11. LACE HARNESS TO FIND NO.1 THRU HOLES

Ⓖ INACTIVE AFTER
PROCUREMENT US

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.03 ANGLES ± DO NOT SCALE THIS DRAWING	DRAWN CHECKED APPROVAL APPROVAL
		MATERIAL	
1003540		HEAT TREATMENT	NASA APPROVAL
NEXT ASSY	USED ON	FINAL FINISH	MIT APPROVAL MIT APPROVAL
APPLICATION			

FOR LI

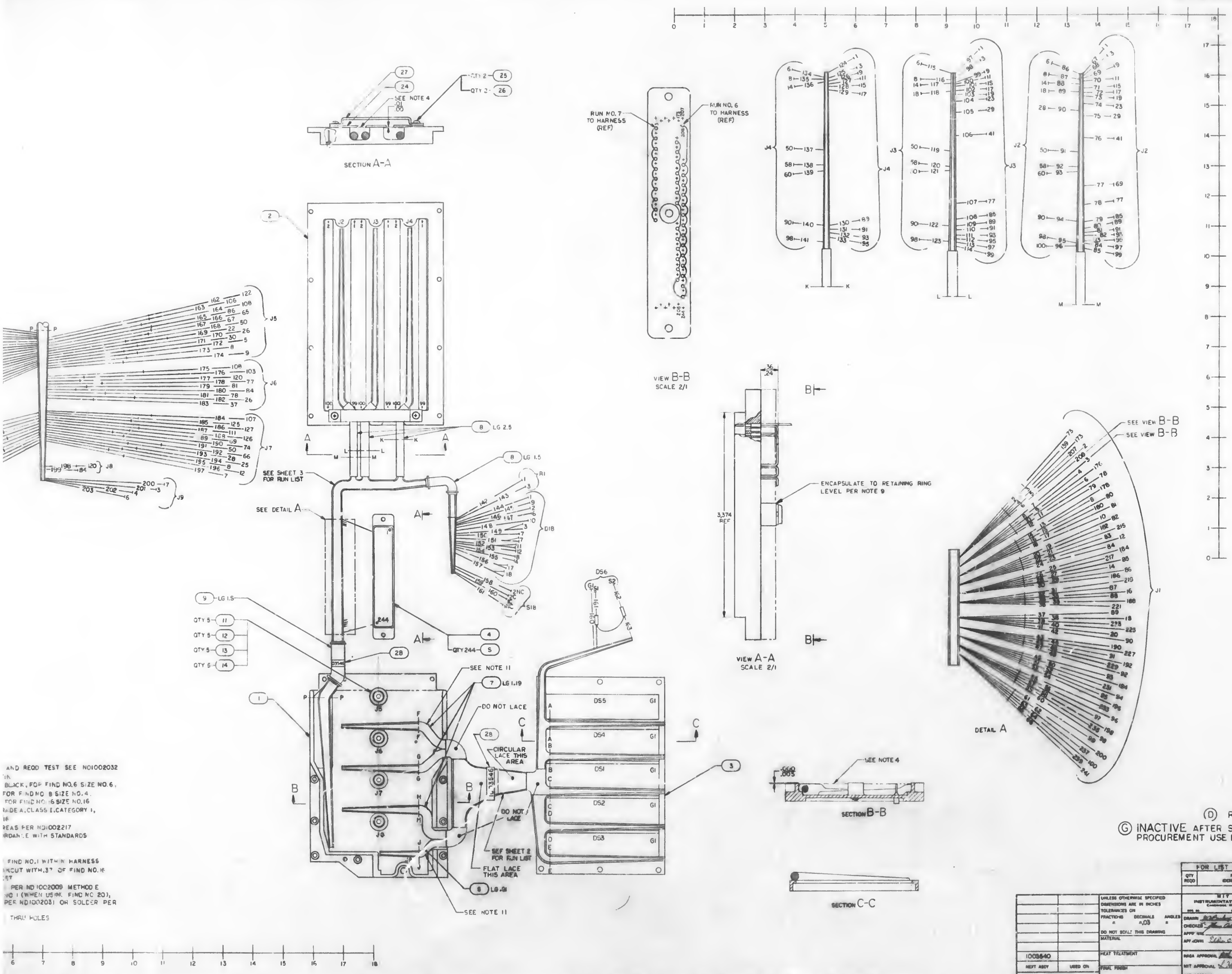
QTY REQD

3546 C

1003546 C

SHEET 1

SYM	DESCRIPTION	DATE	APPROVAL
D	REPLACES REV C WITH CHANGE PER TDRR 07644	4/5/67	Hac
E	REVISED PER TDRR 08409 DR CHK R.W.E.	5/11/67	Hac
F	REVISED PER TDRR 10308 DR CHK	Jun 4	Hac
G	INACTIVE PER TDRR 10810 DR CHK		Hac



AND REQD TEST SEE ND1002032
TA
BLACK, FOR FIND NO.6 SIZE NO.6,
FOR FIND NO 8 SIZE NO.4.
FOR FIND NO.16 SIZE NO.16
RADE A, CLASS I, CATEGORY I,
16
REAS PER ND1002217
RDANCE WITH STANDARDS

FIND NO.1 WITHIN HARNESS
NCUT WITH .37 OF FIND NO.16
ST
PER ND1002009 METHOD E
NO 1 (WHEN USING FIND NO 20),
PER ND1002031 OR SOLDER PER

THRU HOLES

(D) REPLACES REV C WITH CHANGE

(G) INACTIVE AFTER SYSTEM NO.7 FOR NEW PROCUREMENT USE 1003478

FOR LIST OF MATERIALS SEE SHEET 4

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY	USED ON
1003540	

APPLICATION

MIT INSTRUMENTATION LAB
Cambridge, Mass.

DRAWN
CHECKED
APPD
APPROVED Eldon C Hall
NASA APPROVAL
MIT APPROVAL L Wolfe
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, MAIN

CODE IDENT NO — SIZE J NASA DRAWING NO. 1003546
SCALE 1/1 WT SHEET 1 OF 4

ASSEMBLY INFORMATION CHART						
FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	79	SHLD	30	21	[illegible]	*
*	162				118	
*	302				119	
	125				316	*
	127				180	*
*	181				112	
	111				294	*
*	293				96	
*	189				92	
*	250				86	
*	236				80	
*	170				110	
	103				205	*
*	253				137	
	138				254	*
	24				243	*
	71				229	*
	157				222	*
*	269				145	
	152				283	*
	133				330	*
*	323				41	
*	333				67	
	51				334	*
	35				309	*
	47				262	*
*	290				65	
	58				276	*
	22				177	*
*	212				15	
*	196	SHLD	30	21	5	
SEE NOTE 10 TYP ●	120	WHT	30	20	304	
	318				130	●
●	93				191	
●	90				252	
●	81				238	
●	101				172	
	207				102	●
	245				23	●
	231				68	●
	224				154	●
●	144				271	
	285				143	●
	332				134	●
●	45				325	
	311				36	●
	264				48	●
●	56				292	
	278				57	●
	179				13	●
●	14				214	
●	6	WHT	30	20	[illegible]	
	163	WHT	26	19	169	
	182				221	
	255				261	
	295				301	
	335	WHT	26	19	336	
	160	WHT	30	20	164	
	164				216	
	216				256	
	256				296	
	296				132	●
●	29				242	
	241				28	●
●	27				244	
	240				26	●
●	25				239	
	235				74	●
●	75				234	
	237				76	●
●	77				233	
	246				87	●
●	82				248	
	251				84	●
●	83				249	
	247				[illegible]	●
●	78	WHT	30	20	232	

* SEE GROUND SHEATH CONNECTION CHART

ASSEMBLY INFORMATION CHART						
FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	230	WHT	30	20	70	●
SEE NOTE 10 TYP ●	73				227	
	228				72	●
●	69				226	
	225				66	●
●	64				288	
	291				62	●
●	63				289	
	287				61	●
●	60				286	
	284				149	●
●	151				281	
	282				150	●
●	148				280	
	279				147	●
●	146				265	
	266				141	●
●	142				270	
	267				140	●
●	139				268	
	272				59	●
●	55				277	
	275				52	●
●	53				274	
	273				54	●
●	50				258	
	257				49	●
●	46				263	
	260				43	●
●	44				259	
	223				156	●
●	159				219	
	220				152	●
●	155				218	
	217				153	●
●	136				327	
	331				131	●
●	135				326	
	329				128	●
●	129				328	
	324				39	●
●	42				319	
	322				38	●
●	40				320	
	321				37	●
●	34				305	
	306				33	●
●	32				310	
	308				30	●
●	31				307	
	317				123	●
●	126				312	
	313				124	●
●	122				315	
	314				121	●
●	117				297	
	298				116	●
●	115				303	
	300				113	●
●	114				299	
●	109				167	
	165				105	●
●	108				168	
	166				106	●
●	107				171	
	173				17	●
●	19				174	
	175				21	●
●	20				176	
	178				19	●
●	16				208	
	213				12	●
●	9				211	
	210				10	●
●	11				209	
	206				100	●
●	104				200	
	201				99	●
●	98				202	
	203	WHT	30	20	97	●

ASSEMBLY INFORMATION CHART						
FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
SEE NOTE 10 TYP ●	95	WHT	30	20	185	
	184				94	●
●	91				190	
	186				89	●
●	98				187	
	192				7	●
●	8				193	
	194				3	●
●	2				195	
	197	WHT	30	20	4	●
	1	WHT	26	19	183	
	183				188	
	196A	WHT	28	19	204	

REVISIONS 05038			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 06080		
B	REVISED PER TDRR 07347 DR Carlson CHK		
D	REVISED PER TDRR 07644 DR CHK	1/3/6	
E	REVISED PER TDPR 08409 DR CHK R.W.S.	5/1/64	
F	REVISED PER TDRR 10307 DR D. CHK R.W.S.	10 Sept 64	
G	INACTIVE PER TDRR 10610 DR CHK J.S.L.	9/27/6	

INTERNAL GRD SHEATH CONNECTIONS			
FROM	TO	LENGTH	FIND NO.
161	162	2	19
170	177	2	
177	180	3	
180	181	1.25	
189	196	2	
212	205	2	
222	229	2	
229	236	2	
236	243	2	
243	250	2	
250	253	1.50	
253	254	1	
262	269	2	
265	276	2	
276	283	2	
278	283	1.50	
283	290	2	
290	293	1.50	
293	294	1	
302	309	2	
309	316	2	
316	323	2	
323	330	2	
330	333	1.50	
333	334	1	19

Ⓖ INACTIVE AFTER SYSTEM NO.7 FOR NEW PROCUREMENT USE 1003478

Q'TY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003540	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN P. Rogers DATE
CHECKED C.G. Coggins 5 Dec 63
APPROVAL
APPROVAL E.C. Hall
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, MAIN

CODE IDENT NO ——— SIZE J NASA DRAWING NO 1003546
SCALE NONE WT SHEET [illegible] OF 4

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	59	WHT	26	19	67	
	69				40	
	44				72	
	73				47	
	9				75	
	76				66	
	16				80	
	81				13	
	20				83	
	84				25	
	51				97	
	99				55	
	21				102	
	103				26	
	65				105	
	106				63	
	35				109	
	110				30	
	43				112	
	113				46	
	31				124	
	126				36	
	39				129	
	130				54	
	50				131	
	133				62	
	33				144	
	145				23	
	10				146	
	147				38	
	18				148	
	149				3	
	4				151	
	151				6	
	5				152	
	152				7	
	14				153	
	155				28	
	2				156	
	158				11	
	12				159	
	160				8	
	41				166	
	169				53	
	34				177	
	179				37	
	42				181	
	60				184	
	185				19	
	64				186	
	167				56	
	57				188	
	189				15	
	22				192	
	193				61	
	17				194	
	197				24	
	52				198	
	200				58	
	1				202	
	27				208	
	212				29	
	32				214	
	227				45	
	48				228	
	230				49	
	77				157	
	157				143	
	154				161	
	150	WHT	26	19	90	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
WIRE WRAP PER NOTE 10 J5 REF	162	WHT	30	20	91	
	163				92	
	164				78	
	165				96	
	167				141	
	168				128	
	170				107	
	171				108	
	172				121	
	173				136	
	174				120	
WIRE WRAP PER NOTE 10 J6 REF	175				119	
	176				122	
	178				79	
	180				85	
	182				93	
	183				111	
WIRE WRAP PER NOTE 10 J7 REF	190				115	
	191				100	
	195				116	
	196				98	
SEE NOTE 10 J8 REF	199				132	
WIRE WRAP PER NOTE 10 J9 REF	201				142	
	203				156	
WIRE WRAP PER NOTE 10 J5 REF	204				149	
	205				125	
	206				82	
	207				101	
	209				135	
	210				86	
	211				137	
	213				94	
	215				118	
	216				117	
	217				68	
	218				95	
	219				138	
	220				104	
	221				127	
	222				134	
	223				139	
WIRE WRAP PER NOTE 10 J7 REF	224				74	
	225				114	
	226				70	
	229				123	
	231				88	
	232				87	
	233				140	
	234				71	
	235	WHT	30	20	89	

CONNECTOR JUMPER LIST

		DESCRIPTION				
REMARKS	FROM	COLOR	AWG	FIND NO.	TO	REMARKS
CABLE GROUP III REF	J1-21	WHT	26	19	J1-19	
	J1-19				J1-17	
	J1-17				J1-15	
	J1-15				J1-13	
	J1-13				J1-11	
	J1-11				J1-9	
	J1-9				J1-7	
	J1-7				J1-5	
	J1-5				J1-3	ALSO RUN NO. 7
CABLE GROUP II REF	J1-177				J1-179	
	J1-179				J1-181	
	J1-181				J1-183	
	J1-183				J1-185	
	J1-185				J1-187	
	J1-187				J1-189	
	J1-189				J1-191	
	J1-191				J1-193	
	J1-193				J1-195	
	J1-195				J1-197	
	J1-197				J1-199	
	J1-199				J1-201	
	J 201				J1-242	
	J1-242				J1-240	
	J1-240				J1-238	
	J1-238				J1-236	
	J1-236				J1-234	
	J1-234				J1-232	
	J1-232				J1-230	
	J1-230				J1-228	
	J1-228				J1-226	
	J1-226				J1-224	
	J1-224				J1-222	
	J1-222				J1-220	
	J1-220				J1-218	
	J1-218				J1-216	
	J1-216	WHT	26	19	J1-208	ALSO RUN NO. 6

Ⓓ REPLA

Ⓖ INACTIVE AFT
PROCUREMENT U

QTY REQD

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

NEXT ASSY	USED ON
1003540	1003400

APPLICATION

INSTRU

DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROV
NET APPROV
NET APPROVA

SHEET 3

REV	DESCRIPTION	DATE	APPROVAL
D	REPLACES REV C WITH CHANGE PER TDRR 07644	4/30/64	
E	REVISED PER TDRR 08409 DR CHK R.H.E.	5/6/64	
F	REVISED PER TDRR DR CHK R.H.E.	10 JUN 64	
G	INACTIVE PER TDRR 10610 DR X CHK	9/23/64	

BLY INFORMATION CHART

OLOR	AWG	FIND NO	RUN NO.	REMARKS
WHT	26	19	67	
			40	
			72	
			47	
			75	
			66	
			50	
			13	
			83	
			25	
			97	
			55	
			102	
			26	
			105	
			63	
			109	
			30	
			112	
			46	
			124	
			36	
			129	
			54	
			131	
			62	
			144	
			23	
			146	
			38	
			148	
			3	
			151	
			6	
			152	
			7	
			153	
			28	
			156	
			11	
			159	
			8	
			166	
			53	
			177	
			37	
			181	
			184	
			19	
			186	
			56	
			188	
			15	
			192	
			61	
			194	
			24	
			198	
			58	
			202	
			208	
			29	
			214	
			45	
			228	
			49	
			157	
			143	
			161	
WHT	26	19	90	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
WIRE WRAP PER NOTE 10 J5 REF	162	WHT	30	20	91	
	163				92	
	164				78	
	165				96	
	167				141	
	168				128	
	170				107	
	171				108	
	172				121	
	173				136	
	174				120	
WIRE WRAP PER NOTE 10 J6 REF	175				119	
	176				122	
	178				79	
	180				85	
	182				93	
	183				111	
WIRE WRAP PER NOTE 10 J7 REF	190				115	
	191				100	
	195				116	
	196				98	
SEE NOTE 10 J8 REF	199				132	
WIRE WRAP PER NOTE 10 J9 REF	201				142	
	203				156	
WIRE WRAP PER NOTE 10 J5 REF.	204				149	
	205				125	
	206				82	
	207				101	
	209				135	
	210				86	
	211				137	
	213				94	
	215				118	
	216				117	
	217				68	
	218				95	
	219				138	
	220				104	
	221				127	
	222				134	
	223				139	
WIRE WRAP PER NOTE 10 J7 REF	224				74	
	225				114	
	226				70	
	229				123	
	231				88	
	232				87	
	233				140	
	234				71	
	235	WHT	30	20	89	

CONNECTOR JUMPER LIST

		DESCRIPTION				
REMARKS	FROM	COLOR	AWG	FIND NO.	TO	REMARKS
CABLE GROUP III REF	J1-21	WHT	26	19	J1-19	
	J1-19				J1-17	
	J1-17				J1-15	
	J1-15				J1-13	
	J1-13				J1-11	
	J1-11				J1-9	
	J1-9				J1-7	
	J1-7				J1-5	
	J1-5				J1-3	ALSO RUN NO. 7
CABLE GROUP II REF	J1-177				J1-179	
	J1-179				J1-181	
	J1-181				J1-183	
	J1-183				J1-185	
	J1-185				J1-187	
	J1-187				J1-189	
	J1-189				J1-191	
	J1-191				J1-193	
	J1-193				J1-195	
	J1-195				J1-197	
	J1-197				J1-199	
	J1-199				J1-201	
	J1-201				J1-242	
	J1-242				J1-240	
	J1-240				J1-238	
	J1-238				J1-236	
	J1-236				J1-234	
	J1-234				J1-232	
	J1-232				J1-230	
	J1-230				J1-228	
	J1-228				J1-226	
	J1-226				J1-224	
	J1-224				J1-222	
	J1-222				J1-220	
	J1-220				J1-218	
	J1-218				J1-216	
	J1-216	WHT	26	19	J1-208	ALSO RUN NO. 6

Ⓓ REPLACES REV C WITH CHANGE

Ⓖ INACTIVE AFTER SYSTEM NO. 7 FOR NEW PROCUREMENT USE 1003478

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY	USED ON
1003540	1003400

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN
CHECKED
APPROVAL
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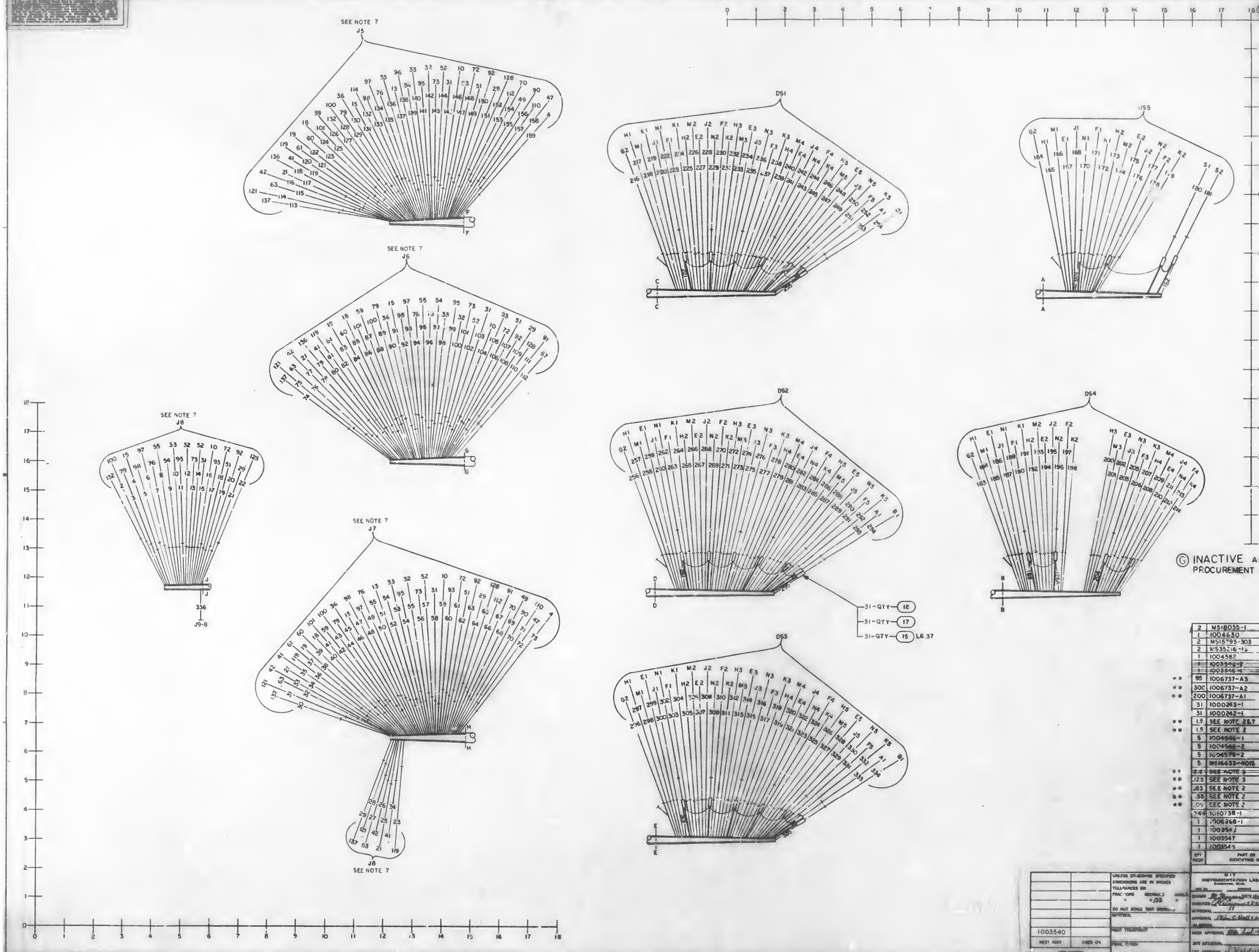
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, MAIN

CODE IDENT NO. ——
SIZE J
NASA DRAWING NO. 1003546
SCALE NONE
WT
SHEET 3 OF 4

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 06050	[illegible]	[illegible]
B	REVISED PER TDRR 07347 DR [illegible] CHK [illegible]	[illegible]	[illegible]
D	REVISED PER TDRR 07646 DR [illegible] CHK [illegible]	4/30/6[illegible]	[illegible]
E	REVISED PER TDRR 08409 DR [illegible] CHK R.W.E.	7/[illegible]/6[illegible]	[illegible]
F	REVISED PER TDRR 10307 DR [illegible] CHK R.W.E.	[illegible]	[illegible]
G	INACTIVE PER TDRR 1[illegible]10 DR [illegible] CHK [illegible]	8/27/6[illegible]	[illegible]



Ⓖ INACTIVE AFTER SYSTEM NO. 7 FOR NEW PROCUREMENT USE 1003478

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	2	MS18035-1	STRAP CABLE ID	28
	1	1004630	BRACKET, CABLE SUPPORT	27
	2	MS15795-303	WASHER, FLAT	26
	2	MS35216-1[illegible]	SCREW, PAN HD	25
	1	1004582	PLATE, CABLE SUPPORT	24
	~~1~~	~~1003[illegible]~~	~~HARNESS SUB ASSY~~	~~23~~
	~~1~~	~~1003[illegible]~~	~~HARNESS SUB ASSY~~	~~22~~
**	95	1006737-A3	WIRE, ELECTRICAL SHLD AWG 30	21
**	300	1006737-A2	WIRE, ELECTRICAL SOLID AWG 30	20
**	200	1006737-A1	WIRE, ELECTRICAL SOLID AWG 26	19
	31	1000243-1	FERRULE, ELECTRICAL CONDUCTOR	18
	31	1000242-1	FERRULE, ELECTRICAL CONDUCTOR	17
**	1.5	SEE NOTE 2&7	SLEEVING	16
**	1.5	SEE NOTE 2	SLEEVING	15
	5	1004546-1	WASHER, FLAT	14
	5	1004546-2	WASHER, FLAT	13
	5	1004579-2	SCREW, JACKING	12
	5	MS16633-4015	RING, RETAINING	11
**	~~2.5~~	~~SEE NOTE 3~~	~~SLEEVING~~	~~10~~
**	.125	SEE NOTE 3	SLEEVING	9
**	.83	SEE NOTE 2	SLEEVING	8
**	.33	SEE NOTE 2	SLEEVING	7
**	.09	SEE NOTE 2	SLEEVING	6
	244	1010738-1	CONTACT (MALE)	5
	1	1006268-1	CONNECTOR, PLUG	4
	1	1003542	GASKET & FRAME ASSY	3
	1	1003547	CONN PL, WIRE WRAP ASSY (DECODING)	2
	1	1003544	CONN PL, WIRE WRAP ASSY (RELAY)	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003540	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 5/2/62
APPROVAL
APPROVAL Elvin C. Hall [illegible]
NASA APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, MAIN.

CODE IDENT NO. ——— SIZE J NASA DRAWING NO. 1003546
SCALE 1/1 SHEET 4 OF 4

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REVISIONS 04735

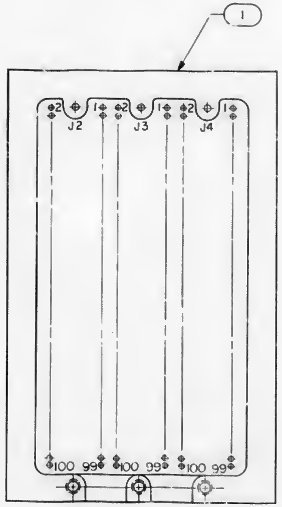
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06050	[illegible]	[illegible]
B	REVISED PER TDRR 07500 DR A. Carlson CHK [illegible]	4/8/64	HWC
C	REVISED PER TDRR 10737 DR A.A. Wheeler CHK R.W.E. RTM	9/9/64	Hac
D	REVISED PER TDRR 16:00 DR [illegible] CHK R.W.E. BM	4/23/65	BJB

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
* J2-69	YELLOW	30	2	J3-69
J3-69				J4-69
J2-22				J2-52
J3-22				J3-52
J2-26				J3-43
J3-43				J4-65
* J2-28				J2-30
J2-30				J2-87
J2-40				J3-54
J3-54				J4-57
J2-43				J3-26
J3-26				J3-81
J2-46				J3-80
J3-80				J4-49
J3-49				J3-40
J3-40				J2-54
J2-55				J3-55
J3-55				J3-71
J2-61				J3-65
J3-65				J3-66
J3-82				J2-63
J2-63				J3-57
J2-66				J2-81
J2-81				J3-61
J2-74				J2-71
J2-71				J3-74
J2-76				J2-65
J2-65				J3-88
J2-80				J2-57
J2-57				J3-46
J2-88				J3-76
J3-76				J2-49
J2-52				J2-67
J4-22				J4-52
J2-87				J3-87
J3-87				J3-30
J3-30				J3-28
J3-28				J4-28
J4-28				J4-30
J4-30	YELLOW	30	2	J4-87

* INDICATES WIRE WRAP MUST BE ON FIRST LEVEL

NOTES
1. WIRE PER ND1002031
2. AR DENOTES AS REQUIRED
3. PROGRAM PER 1004576
4. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
5. THE ORIGINAL CONFIGURATION IS IDENTIFIED BY THE DRAWING NUMBER AND A -000 SUFFIX

-011	1,2,4,& 5
-000	1 THRU 5
DASH NO.	APPLICABLE NOTES
NOTES APPLICATION	



☒	—	1005760	WIREWRAP CARD DECK	REF
AR	AR	1006732-1	WIRE, ELECTRICAL	2
1	1	1004585	PLATE, DECODING MODULE	1
QTY REQD	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
-011	-000	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003807	
1003483	
1003478	
1003546	
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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MATERIAL
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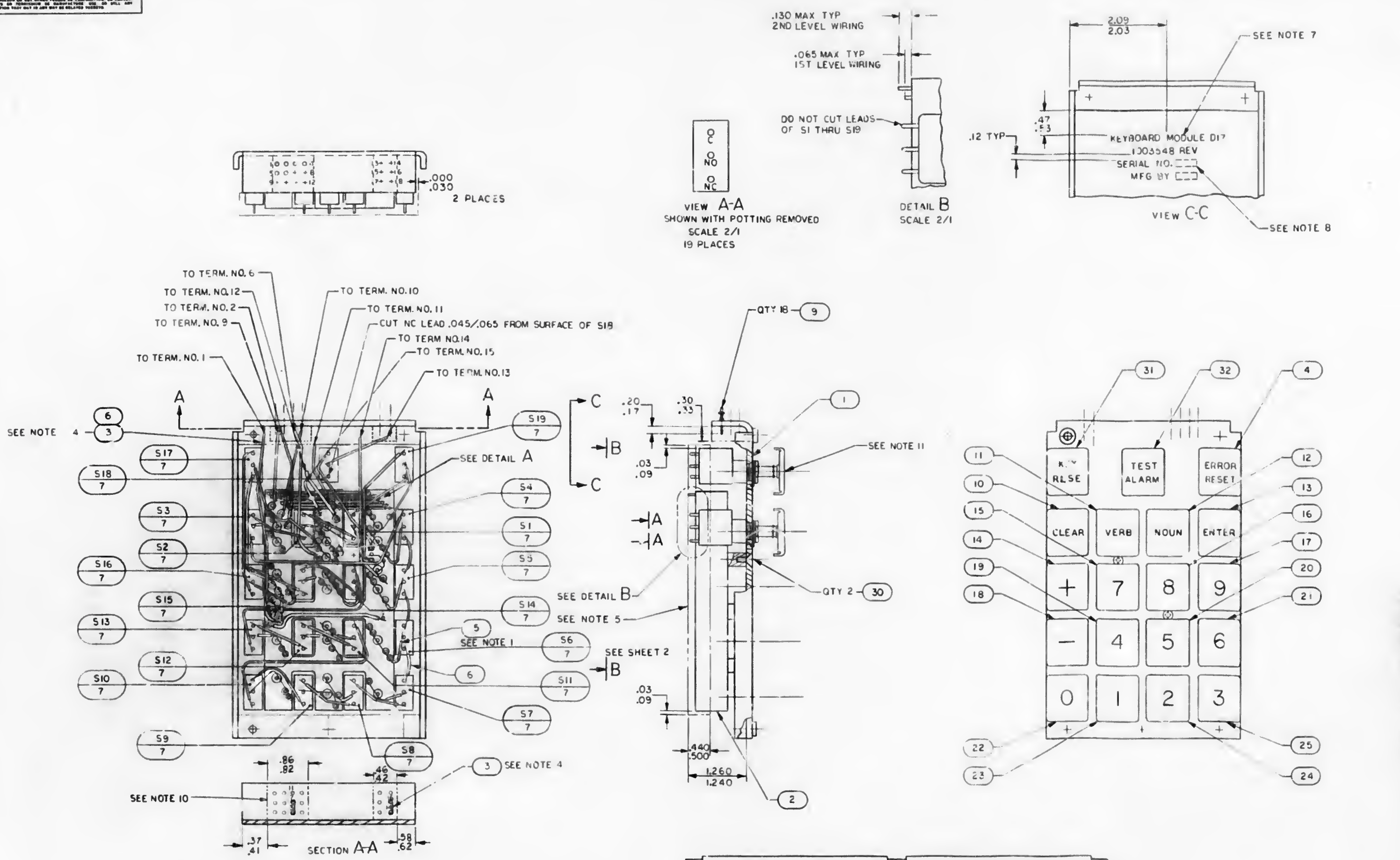
DWG NO CONTRACT
DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 12 Nov 63
APPROVAL [illegible] 11-18-63
APPROVAL [illegible] 15 Nov 63
NASA APPROVAL [illegible]
MIT APPROVAL
MIT APPROVAL [illegible] 11/19/63

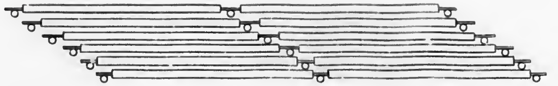
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONNECTOR PLATE
WIRE WRAP ASSY., DECODING MODULE
AGC DSKY MAIN

CODE IDENT NO. —
SIZE D
NASA DRAWING NO. 1003547
SCALE 1/1
WT
SHEET 1 OF 1

	REVISIONS 05563		
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 07071 DR H. Carlson CHK	12 Nov 64	
B	REVISED PER TDRR 08100 DR CHK A.F.B. F.L.	3/1/65	
C	REVISED PER TDRR 10613 DR R.N. DuPont Jr. CHK RTM	8/3/65	
D	REVISED PER TDRR 12765 DR CHK RTM	7/1/66	





DETAIL A
FOR CLARITY ONLY
SCALE 4/1

⊖ REPLACES 1003097 AFTER SYSTEM NO.7

NOTES:

1. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 WHEN USING FIND NO.5
2. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
3. STAKE COMPONENTS TO FIND NO.2 PER ND1002004
4. SOLDER ALL CONNECTIONS TO FIND NO. 9 PER ND1002071
5. ENCAPSULATE MODULE PER ND1002036 TO DIMENSIONS SHOWN
6. * DENOTES LENGTH IN FEET
7. MARK .12 HIGH WHITE PER ND1002019 & ND1002122, TYPE II, CLASS I USING MARKING INK DWG. NO 1006271-1
8. SERIALIZE PER ND1002023
9. BRUSH COAT THIS SURFACE PER ND1002059 TO A MINIMUM HEIGHT OF .015 ABOVE COMPONENT LEADS & FEEDTHRUS
10. ENCAPSULATE THIS AREA PER NO. 1002217 PRIOR TO ENCAPSULATION PER NOTE 5
11. FIND NO. 7 SHALL MEET THE FOLLOWING ACTUATION REQUIREMENTS BEFORE AND AFTER ENCAPSULATION PER NOTE 5:
    PRETRAVEL: .093 MIN .188 MAX
    OVERTRAVEL: .060 MIN

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006160	SCHEMATIC	REF
1	1006777-24	CAPACITOR, FIXED CERAMIC	39
1	1010406-7	COIL, RF, CHOKE	38
6	1006750-1	RESISTOR, FIXED FILM	37
1	1004605	INSULATOR, PLATE	36
1	1006750-56	RESISTOR, FIXED FILM	35
1	1006752	TRANSISTOR, SILICON TYPE NPN	34
2	1006750-32	RESISTOR, FIXED FILM	33
1	1004602-17	BUTTON, KEYBOARD	32
1	1004602-19	BUTTON, KEYBOARD	31
2	MS35200-12	SCREW, FLAT HEAD	30
1	1006755-79	CAPACITOR, FIXED, TANTALUM	29
45	1006751	SEMI-CONDUCTOR DEVICE, DIODE	28
19	1006755-57	CAPACITOR, FIXED, TANTALUM	27
2	1006750-39	RESISTOR, FIXED FILM	26
1	1004602-16	BUTTON, KEYBOARD	25
1	1004602-15	BUTTON, KEYBOARD	24
1	1004602-14	BUTTON, KEYBOARD	23
1	1004602-13	BUTTON, KEYBOARD	22
1	1004602-12	BUTTON, KEYBOARD	21
1	1004602-11	BUTTON, KEYBOARD	20
1	1004602-10	BUTTON, KEYBOARD	19
1	1004602-9	BUTTON, KEYBOARD	18
1	1004602-8	BUTTON, KEYBOARD	17
1	1004602-7	BUTTON, KEYBOARD	16
1	1004602-6	BUTTON, KEYBOARD	15
1	1004602-5	BUTTON, KEYBOARD	14
1	1004602-4	BUTTON, KEYBOARD	13
1	1004602-3	BUTTON, KEYBOARD	12
1	1004602-2	BUTTON, KEYBOARD	11
1	1004602-1	BUTTON, KEYBOARD	10
18	1006784-9	TERMINAL, FEED THRU	9
~~* 1.3~~	~~1010416-21~~	~~WIRE ELEC., STRANDED, INSULATED~~	~~8~~
19	1006738	SWITCH, PUSH	7
* 9.3	1006776-21	INSULATION, SLEEVING	6
* 12.0	1006757-1	WIRE ELECTRICAL, .010 X .020	5
1	1004602-18	BUTTON, KEYBOARD	4
* 8.5	1006757-13	WIRE, ELECTRICAL, .020 DIA	3
1	1004596	BLOCK COMPONENT	2
1	1004598	PANEL, FRONT	1

LIST OF MATERIALS

1003524	
NEXT ASSY	USED ON
APPLICATION	

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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

KEYBOARD MODULE
ASSEMBLY (D17)
AGC DSKY, NAV

CODE IDENT NO. SIZE F NASA DRAWING NO 1003548
SCALE 1/1 SHEET 1 OF 2

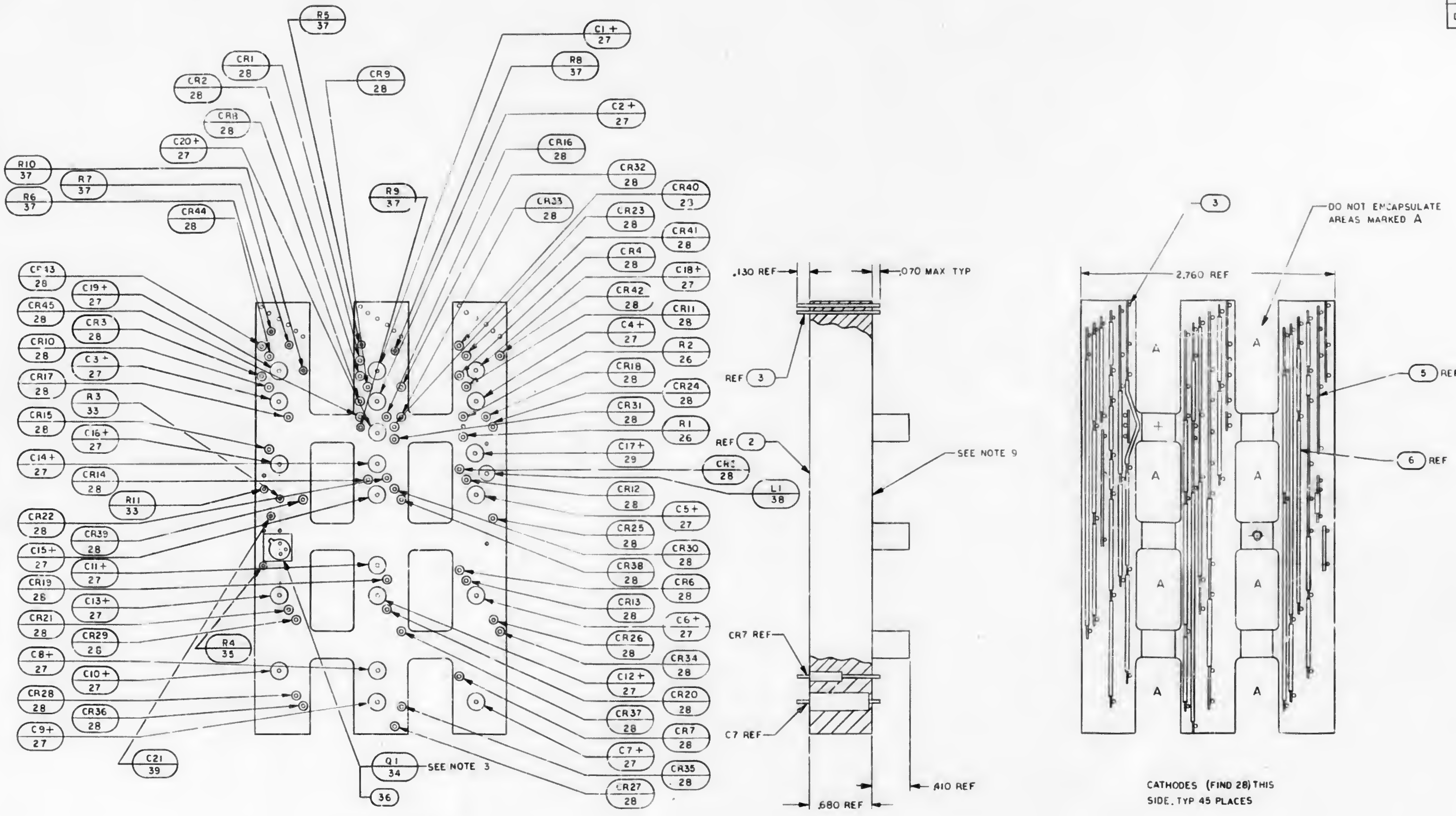
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

NOTICE — [illegible]

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

REVISIONS 05563

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 07071 DR H Carlson CHK	12 Nov 64	
B	REVISED PER TDRR 08100 DR CHK A.P.B. F.R.	5/1/64	
C	REVISED PER TDRR 10613 DR CHK R.H.E. RTM	8/7/64	
D	REVISED PER TDRR 12769 DR CHK RTM	10/1/64	



PARTIAL VIEW B-B
SHOWN BEFORE ASSEMBLY
OF FIND NO.7 & 1

CATHODES (FIND 28) THIS
SIDE, TYP 45 PLACES

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
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CHECKED 19DEC63
APPROVAL
APPROVAL
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MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

KEYBOARD MODULE
ASSEMBLY (D17)
AGC DSKY, NAV

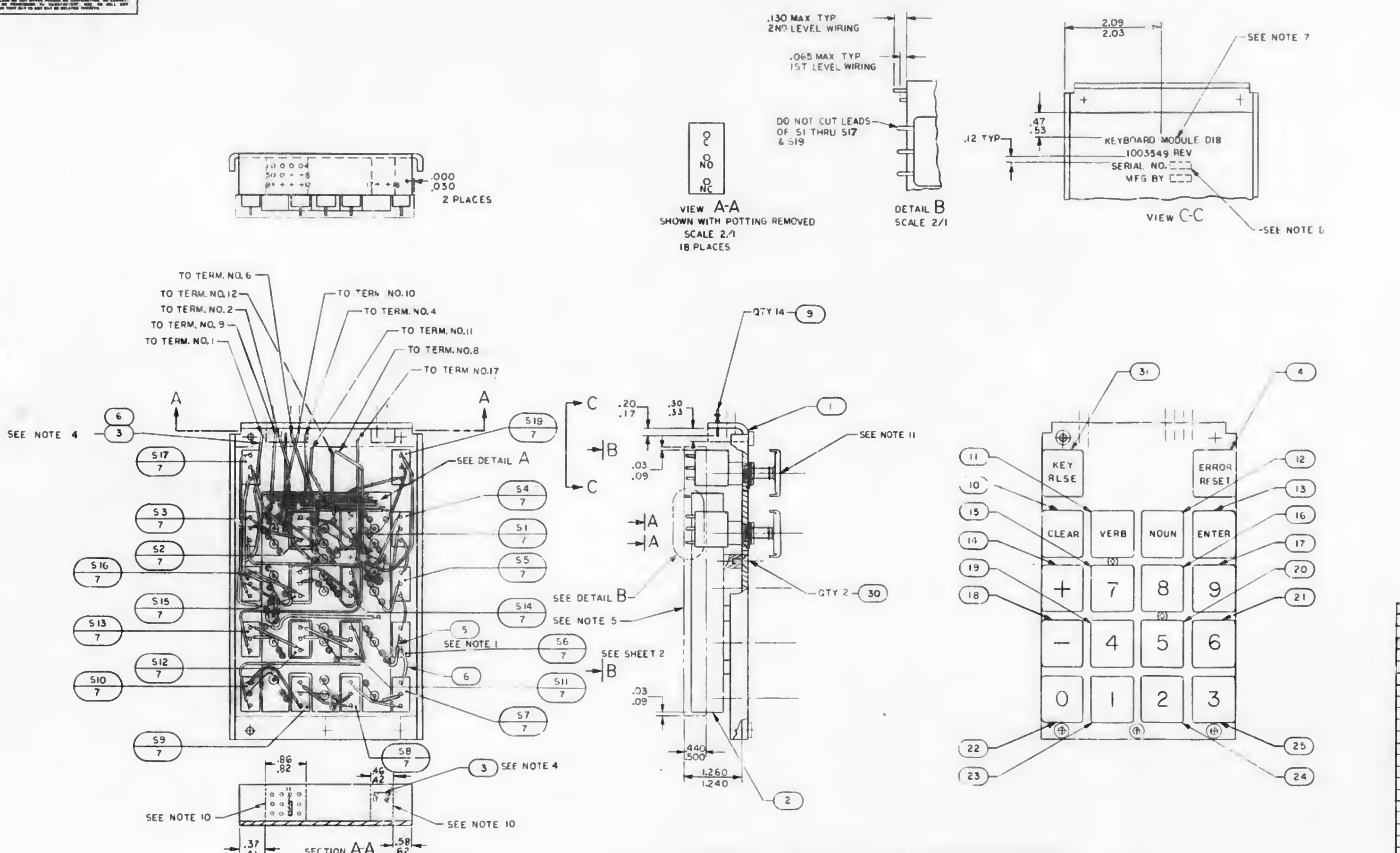
CODE IDENT NO. ——
SIZE F
NASA DRAWING NO. 1003548
SCALE 2/1 WT SHEET 2 OF 2

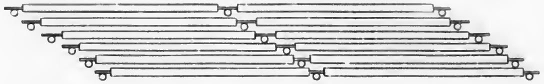
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1003549 D

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 07071 DR Carlson CHK	12 Aug 64	H.a.C
B	REVISED PER TDRR 08100 DR W.D. Pratt CHK A.F.B. F.R.	5/1/64	
C	REVISED PER TDRR 10613 DR W. L. Pratt CHK RTW	8/5/64	
D	REVISED PER TDRR 12766 DR S P Sound CHK RT	11/1/64	




DETAIL A
FOR CLARITY ONLY
SCALE 4/1

⊖ REPLACES 1003539 AFTER SYSTEM NO. 7

NOTES:

1. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 WHEN USING FIND NO. 5
2. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
3. STAKE COMPONENTS TO FIND NO. 2 PER ND1002004
4. SOLDER ALL CONNECTIONS TO FIND NO. 9 PER ND1002071
5. ENCAPSULATE MODULE PER ND1002036 TO DIMENSIONS SHOWN
6. * DENOTES LENGTH IN FEET
7. MARK .12 HIGH WHITE PER ND1002019 & ND1002122, TYPE II, CLASS I USING MARKING INK DWG NO. 1006271-1
8. SERIALIZE PER ND1002023
9. BRUSH COAT THIS SURFACE PER ND 1002009 TO A MINIMUM HEIGHT OF .015 ABOVE COMPONENT LEADS & FEEDTHRUS
10. ENCAPSULATE THIS AREA PER ND1002217 PRIOR TO ENCAPSULATION PER NOTE 5
11. FIND NO. 7 SHALL MEET THE FOLLOWING ACTUATION REQUIREMENTS BEFORE AND AFTER ENCAPSULATION PER NOTE 5:
    PRETRAVEL: .093 MIN .188 MAX
    OVERTRAVEL: .060 MIN

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1006150	SCHEMATIC	REF
1	1006777-24	CAPACITOR, FIXED, CERAMIC	38
1	1010406-7	COIL, R F, CHOKE	37
6	1006750-1	RESISTOR, FIXED FILM	36
1	1004605	INSULATOR, PLATE	35
1	1006750-56	RESISTOR, FIXED FILM	34
1	1006752	TRANSISTOR, SILICON, TYPE NPN	33
2	1006750-32	RESISTOR FIXED FILM	32
1	1004602-19	BUTTON, KEYBOARD	31
2	MS 35200-12	SCREW, FLAT, HEAD	30
1	1006755-79	CAPACITOR, FIXED, TANTALUM	29
45	1006751	SEMI CONDUCTOR DEVICE, DIODE	28
19	1006755-57	CAPACITOR, FIXED, TANTALUM	27
2	1006750-39	RESISTOR, FIXED FILM	26
1	1004602-16	BUTTON, KEYBOARD	25
1	1004602-15	BUTTON, KEYBOARD	24
1	1004602-14	BUTTON, KEYBOARD	23
1	1004602-13	BUTTON, KEYBOARD	22
1	1004602-12	BUTTON, KEYBOARD	21
1	1004602-11	BUTTON, KEYBOARD	20
1	1004602-10	BUTTON, KEYBOARD	19
1	1004602-9	BUTTON, KEYBOARD	18
1	1004602-8	BUTTON, KEYBOARD	17
1	1004602-7	BUTTON, KEYBOARD	16
1	1004602-6	BUTTON, KEYBOARD	15
1	1004602-5	BUTTON, KEYBOARD	14
1	1004602-4	BUTTON, KEYBOARD	13
1	1004602-3	BUTTON, KEYBOARD	12
1	1004602-2	BUTTON, KEYBOARD	11
1	1004602-1	BUTTON, KEYBOARD	10
14	1006784-9	TERMINAL, FEED THRU	9
~~* 1.0~~	~~1010416-21~~	~~WIRE ELEC., STRANDED, INSULATED~~	~~8~~
18	1006738	SWITCH, PUSH	7
* 9.0	1006776-21	INSULATION, SLEEVING	6
* 2.0	1006757-1	WIRE ELECTRICAL, .010 X .020	5
1	1004602-18	BUTTON, KEYBOARD	4
* 8.5	1006757-13	WIRE, ELECTRICAL, .020 DIA	3
1	1004596	BLOCK COMPONENT	2
1	1004598	PANEL, FRONT	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003540	

APPLICATION

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APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL W. Gaffer 9 Jan 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

KEYBOARD MODULE
ASSEMBLY (D18)
AGC DSKY, MAIN

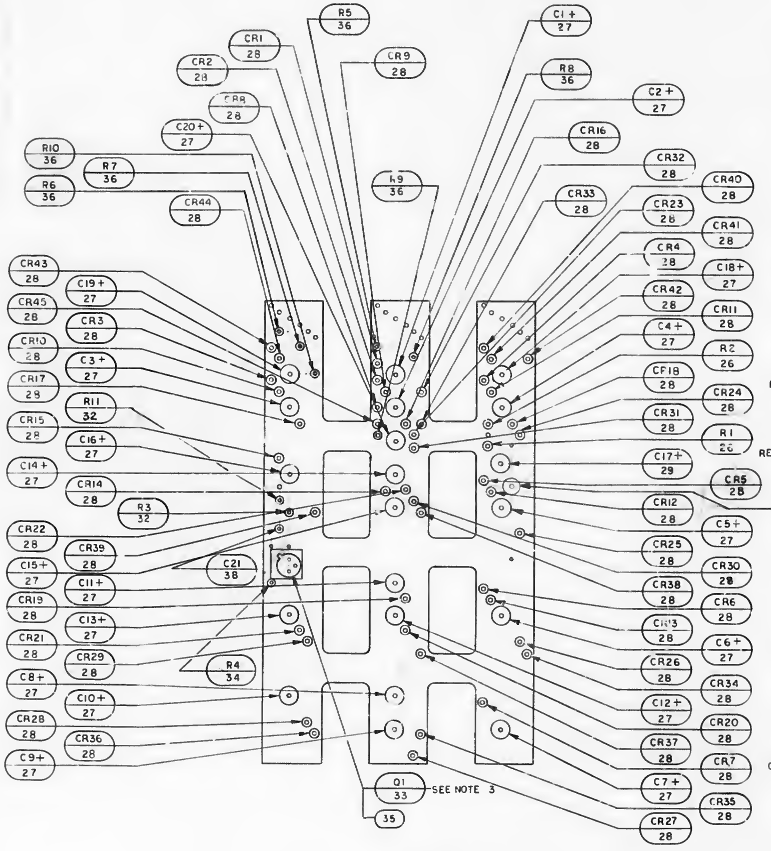
CODE IDENT NO.
SIZE F
NASA DRAWING NO. 1003549
SCALE 1/1
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

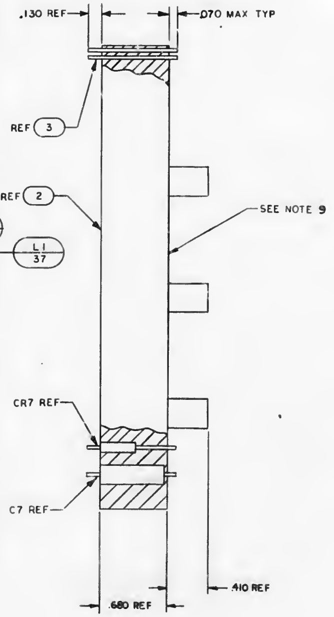
1003549 D

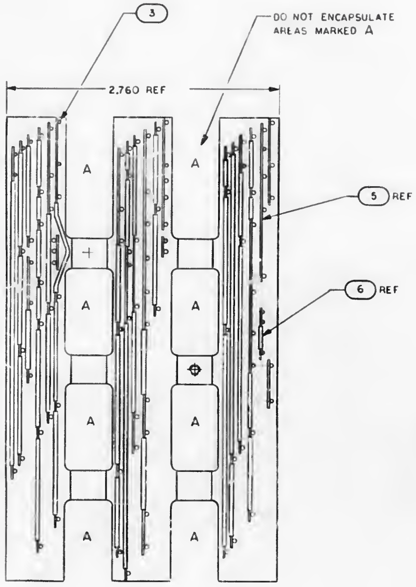
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 07071 DR H Carlson CHK	6 Nov 63	
B	REVISED PER TDRR 08100 DR CHK A.R.B. F.R.	5/1/64	
C	REVISED PER TDRR 10613 DR R.W. CHK R.A.E. RJM	8/3/64	
D	REVISED PER TDRR 12766 DR J.P. CHK RJM	10/1/64	

REVISIONS 05563



PARTIAL VIEW B-B
SHOWN BEFORE ASSEMBLY
OF FIND NO. 7 & 1





CATHODES (FIND 28) THIS
SIDE, TYP 45 PLACES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
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APPROVAL 24 Jan 64
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

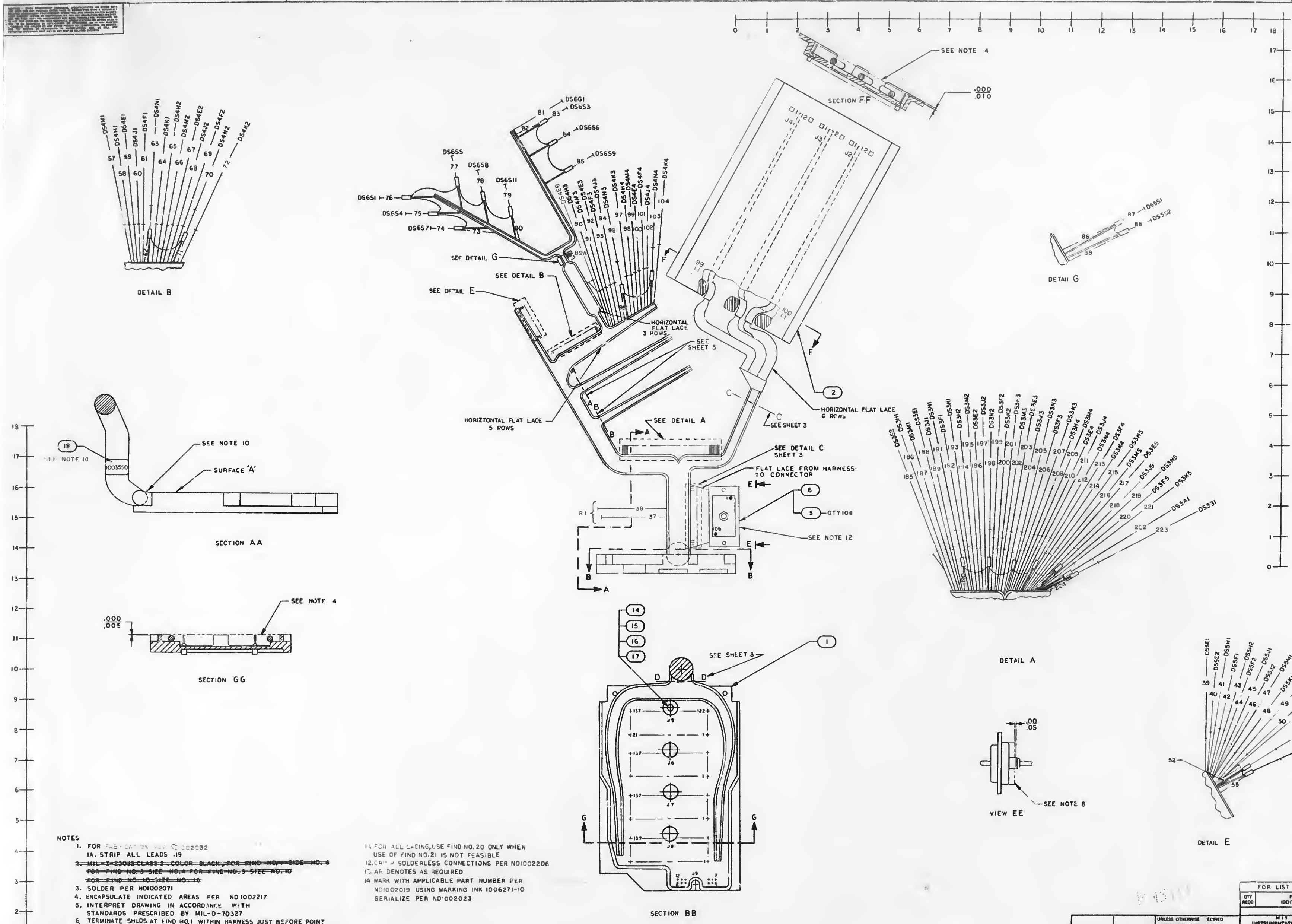
KEYBOARD MODULE
ASSEMBLY (D18)
AGC DSKY MAIN

CODE IDENT NO. —
SIZE F
NASA DRAWING NO. 1003549
SCALE 2/1
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D-70327

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 15110 DR. CHK	7/19/65	
B	REVISED PER TDRR 15789 DR CHK	3/2/65	

REVISIONS 13260



NOTES

1. FOR FABRICATION SEE ND1002032
   1A. STRIP ALL LEADS .19
2. ~~MIL-I-23053 CLASS 2, COLOR BLACK, FOR FIND NO. 4 SIZE NO. 6 FOR FIND NO. 5 SIZE NO. 4 FOR FIND NO. 9 SIZE NO. 10 FOR FIND NO. 10 SIZE NO. 16~~
3. SOLDER PER ND1002071
4. ENCAPSULATE INDICATED AREAS PER ND1002217
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
6. TERMINATE SHLDS AT FIND NO.1 WITHIN HARNESS JUST BEFORE POINT OF BREAKOUT WITH .37 OF FIND NO.10
7. *DENOTES LENGTH IN FEET
8. ENCAPSULATE INDICATED AREA USING SILASTIC RUBBER PER ND1002009 METHOD E
9. ●ALL CONNECTIONS TO FIND NO.1 WHEN USING FIND NO.19 TO BE MADE BY SOLDERING PER ND1002071
10. FLAT LACE SIDE OF HARNESS TO ALLOW TRUNK TO LIE BELOW SURFACE "A"
11. FOR ALL LACING, USE FIND NO. 20 ONLY WHEN USE OF FIND NO. 21 IS NOT FEASIBLE
12. CRIMP SOLDERLESS CONNECTIONS PER ND1002206
13. AR DENOTES AS REQUIRED
14. MARK WITH APPLICABLE PART NUMBER PER ND1002019 USING MARKING INK 1006271-10 SERIALIZE PER ND1002023

FOR LIST OF MATERIALS SEE SHEET 3

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003551
NEXT ASSY | USED ON
APPLICATION

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MATERIAL
HEAT TREATMENT
FINAL FINISH

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DRAWN R. Lunford DATE 10/29/64
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APPROVAL 11/4/64
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APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 13 Nov 64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, NAV

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003550
SCALE 1/1
WT
SHEET 1 OF 3

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REVISIONS 13260			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 15117 DRJ J. Juon CHK R.H.S.		
B	REVISED PER TDRR 15789 DR R. Dunstan CHK R.H.S.	3/5/	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
*	76	SHLD	28	13	533	
	532				79	*
*	78				501	
	524				83	*
*	84				547	
	565				77	*
*	75				27	
	26				74	*
*	85				12	
	21	SHLD		13	53	*
	64	WHT		19	22	● SEE NOTE 9
●	24	WHT		19	127	
*	125	SHLD		13	5	
●	7	WHT		19	141	
*	139	SHLD		13	19	
*	88	SHLD		13	378	
●	376	WHT		19	48	
*	53	SHLD		13	369	
●	382	WHT		19	97	
*	96	SHLD		13	386	
	389	SHLD		13	182	*
*	183	SHLD		13	375	
	391	SHLD		13	179	*
	181	WHT		19	436	●
●	431	WHT		19	167	
*	165	SHLD		13	424	
	421	SHLD		13	223	*
*	222	SHLD		13	441	
●	434	WHT		19	120	
*	118	SHLD		13	395	
●	535	WHT		19	200	
*	198	SHLD		13	557	
●	554	WHT		19	214	
*	212	SHLD		13	541	
●	537	WHT		19	153	
*	151	SHLD		13	538	
●	567	WHT		19	134	
*	132	SHLD		13	577	
	570	SHLD		13	70	*
	72	WHT		19	569	●
	404	SHLD		13	103	*
	104	WHT		19	408	●
●	411	WHT		19	50	
*	54	SHLD		13	415	
*	87	SHLD		13	507	
	520	SHLD		13	191	*
	193	WHT		19	518	●
	510	SHLD		13	205	*
	207	WHT		19	500	●
	497	SHLD		13	219	*
	221	WHT		19	494	●
●	481	WHT		19	174	
*	172	SHLD		13	468	
	479	SHLD		13	158	*
	160	WHT		19	480	●
	490	SHLD		13	142	*
*	143	SHLD		13	489	
●	466	WHT		19	113	
*	111	SHLD	28	13	462	
	82	BLK	26	11	80	
	73				89	
	86				52	
	564				894	
	894				62	
	55				110	
	144				150	
	184				190	
	224	BLK	26	11	398	
	81	WHT	28	19	51	
	51				105	
	105				145	
	145				185	
	185				498	●
●	467				106	
	107				465	●
●	460				109	
	108				456	
●	463				112	
	121				581	●
●	1	WHT	28	19	138	
	326	BLK	26	11	35	

* SEE GROUND SHEATH CONNECTION CHART

● INDICATES SOLDER PER NOTE 3

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	136	WHT	28	19	2	●
●	4				122	
	126				8	●
●	9				137	
	140				10	●
●	11				135	
	123				23	●
●	25				124	
	116				417	●
●	427				117	
	115				428	●
●	440				119	
	128				580	●
●	578				129	
	133				576	●
●	568				130	
	131				566	●
	61				3	●
●	15				59	
	58				17	●
●	20				60	
	57				380	●
●	372				91	
	94				381	●
●	384				92	
	93				385	●
●	387				39	
	42				383	●
●	377				47	
	49				374	●
●	373				41	
	40				403	●
●	407				44	
	45				410	●
●	412				46	
	43				413	●
●	414				99	
	102				409	●
●	406				100	
	101				405	●
●	402				98	
	226				574	●
●	579				69	
	66				575	●
●	573				67	
	65				572	●
●	571				68	
●	390				90	
	194				563	●
●	562				211	
	209				561	●
●	558				195	
	199				553	●
●	551				210	
	213				550	●
●	549				208	
	196				536	●
●	534				197	
	186				525	●
●	531				189	
	188				530	●
●	526				187	
	192				527	●
●	509				201	
	206				513	●
●	516				203	
	202				511	●
●	515				204	
	217				505	●
●	506				218	
	220				499	●
●	492				216	
	215				493	●
●	419				161	
	177				423	●
●	425				166	
	163				426	●
●	430				180	
	164	WHT	28	19	432	●

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
●	433	WHT	28	19	147	
	176				435	●
●	442				178	
	175				443	●
●	444				162	
	152				560	●
●	545				148	
	146				544	●
●	540				149	
	157				487	●
●	488				156	
	155				484	●
●	482				159	
	154				478	●
●	477				168	
	169				476	●
●	475				173	
	171				472	●
●	470				170	
	114				393	●
●	388				296	
	295				448	●
●	443				294	
	299				453	●
●	455				277	
	273				517	●
●	528				297	
	298				503	●
●	522				256	
	253				512	●
●	521				263	
	264				504	●
●	519				240	
	239				508	●
●	514				33	
	233				502	●
●	496				238	
	242				457	●
●	458				267	
	266				473	●
●	459				250	
	249				474	●
●	469				237	
	235				495	●
●	485				231	
	230				471	●
●	483				236	
	241				555	●
●	559				292	
	289				488	●
●	491				287	
	285				543	●
●	539				281	
	264				556	●
●	552				290	
	291				548	●
●	546				269	
	268				18	●
●	16				276	
	270				13	●
●	6				246	
	243				542	●
●	420				259	
	257				429	●
●	418				262	
	261				437	●
●	371				265	
	278				367	
	367				401	●
●	399				38	
	37	WHT	28	19	360	
	379	WHT	26	12	351	
	303				234	
	232				300	
	306				229	
	228				330	
	307				227	
	225				314	
	315				260	
	258	WHT	26	12	323	

ASSEMBLY INFORMATION CHART

FROM		DESCRIPTION			TO	
REMARKS	RUN NO.	COLOR	AWG	FIND NO.	RUN NO.	REMARKS
	319	WHT	26	12	255	
	254				327	
	321				279	
	280				328	
	329				248	
	247				333	
	322				245	
	244				318	
	301				288	
	286				312	
	317				283	
	282				310	
	308				251	
	252				313	
	309				275	
	274				302	
	334				272	
	271				325	
	361				28	
	29				354	
	342				30	
	31				357	
	362				364	
TWISTED PAIR	35A				359	TWISTED PAIR
	360				35	
	32				349	
	346				36	
	34				304	
	305				33	
	400				363	
	366				355	
	341				529	
	523				345	
	338				464	
	461				340	
	311				454	
	452				347	
	344				451	
	450				352	
	356				445	
	446				316	
	339				447	
	394				324	
	331				392	
	396				335	
	336				416	
	422				358	
	353				438	
	439				348	
	350				34	
	397				320	
	~~564~~				~~56~~	
	~~56~~				~~62~~	
	71				95	
	332				368	
	14				337	
	343				370	
	34	WHT	26	12	293	

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
85	84	1.75	11
84	83	1.50	
79	78	1.75	
78	77	1.75	
77	76	2.25	
76	75	1.75	
75	74	1.75	
54	53	.75	11

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
			11
63	70	2.00	
96	103	2.00	
67	88	.75	
111	118	1.00	11

INTERNAL GND SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
			11
118	125	1.75	
125	132	1.75	
132	139	2.00	
139	142	1.50	
142	143	.75	11

INTERNAL GRD SHEATH CONNECTIONS

FROM	TO	LENGTH	FIND NO.
151	158	2.00	11
158	165	1.75IN	
165	172	1.75	
172	179	1.75	
179	182	1.50	
			11

INTERNAL GND SHEATH CONNECTIONS

TO	FROM	LENGTH	FIND NO.
182	183	.75	11
191	198	2.00	
198	205	1.75	
205	212	1.75	
212	219	1.75	
219	222	1.50	11

INTERNAL GND SHEATH CONNECTIONS

TO	FROM	LENGTH	FIND NO.
222	223	.75	11

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

NEXT ASSY	USED ON
1003551	
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN R. Tenbrook DATE 10/29/64
CHECKED Manning 11/4/64
APPROVAL W. Nistler 11/4/64
APPROVAL
APPROVAL E. T. Duggan
NASA APPROVAL W. J. Rhine
MIT APPROVAL
MIT APPROVAL

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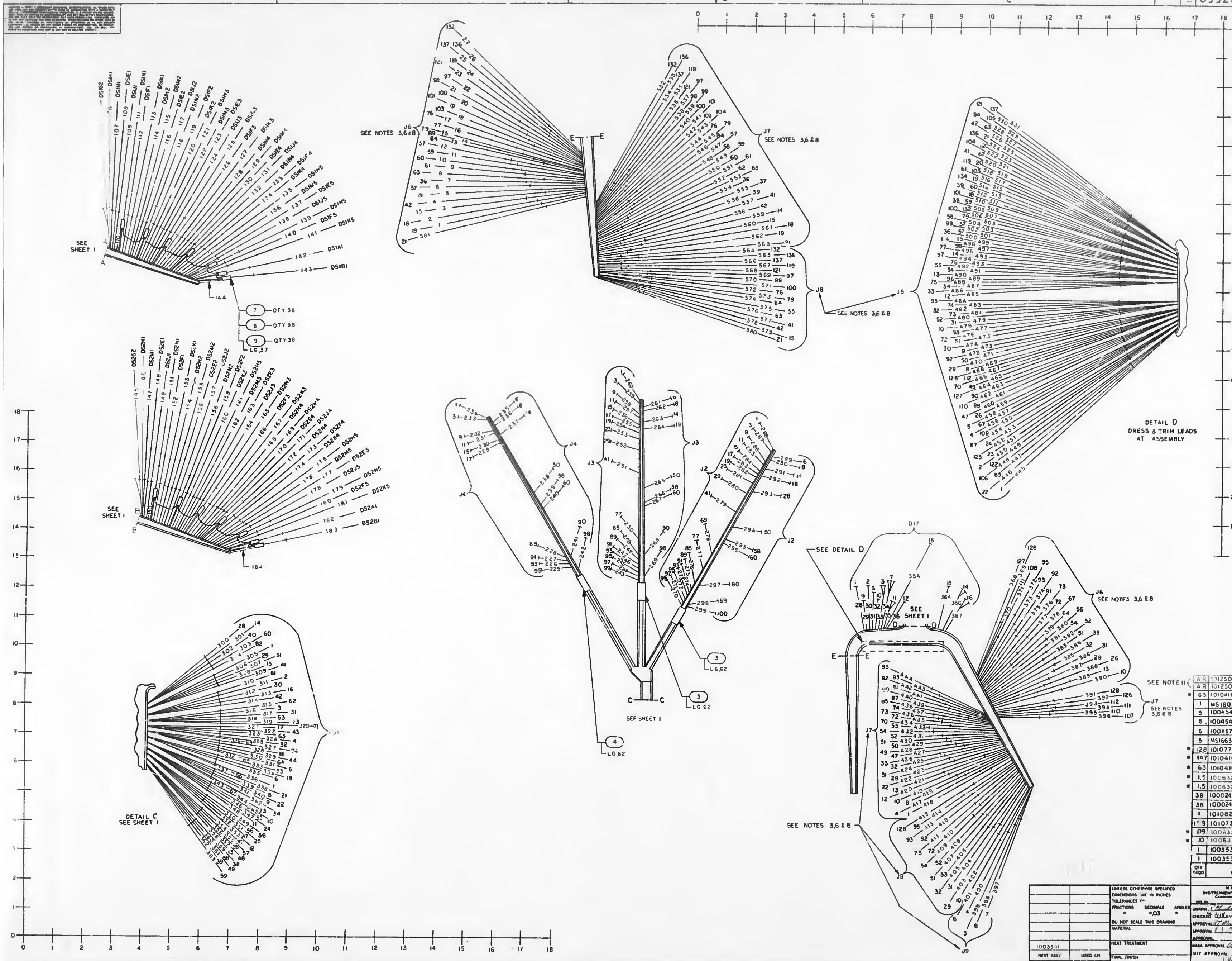
HOUSTON, TEXAS

WIRING HARNESS, BRANCHED
AGC DSKY, NAV

CODE IDENT NO ——— SIZE J NASA DRAWING NO 1003550
SCALE NONE WT SHEET 2 OF 3

REVISIONS 132 60			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 15110 DR CHK BM		
B	REVISED PER TDRR 15789 DR CHK B.M.		



A R	1012507-003	TAPE, LACING	21
A R	1012507-001	TAPE LACING	[illegible]
* 63	1010416-10	WIRE, ELECTRICAL, STRD AWG 28	19
1	MS18035-1-2	STRAP, CABLE IDENT	18
5	1004546-1	WASHER, FLAT	17
5	1004546-3	WASHER, FLAT	16
5	1004579-1	SCREW, JACKING	15
5	MS16633-4015	RING, RETAINING	14
* 128	1010778-1	WIRE, ELECTRICAL, SHLD AWG 28	13
* 447	1010416-20	WIRE, ELECTRICAL, STRD AWG 26	12
* 63	1010416-11	WIRE, ELECTRICAL, STRD AWG 26	11
* 1.5	1006322-005	SLEEVING	10
* 1.5	1006322-007	SLEEVING	9
38	1000243-1	FERRULE, ELECTRICAL CONDUCTOR	8
38	1000242-1	FERRULE, ELECTRICAL CONDUCTOR	7
1	1010825-1	CONNECTOR, PLUG	6
1_8	1010738-5	CONTACT (MALE)	5
* .09	1006322-013	SLEEVING	4
* .10	1006322-015	SLEEVING	3
1	1003531-011	DECODING PLATE WIREWRAP ASSY	2
1	1003535-011	RELAY MODULE WIREWRAP ASSY	1
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1003551		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
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DRAWN R. Guilford DATE
CHECKED Williams
APPROVAL R. Martin
APPROVAL E. J. Cassidy
APPROVAL
NASA APPROVAL W. J. 11-17-64
MIT APPROVAL
MIT APPROVAL 13 Nov 64

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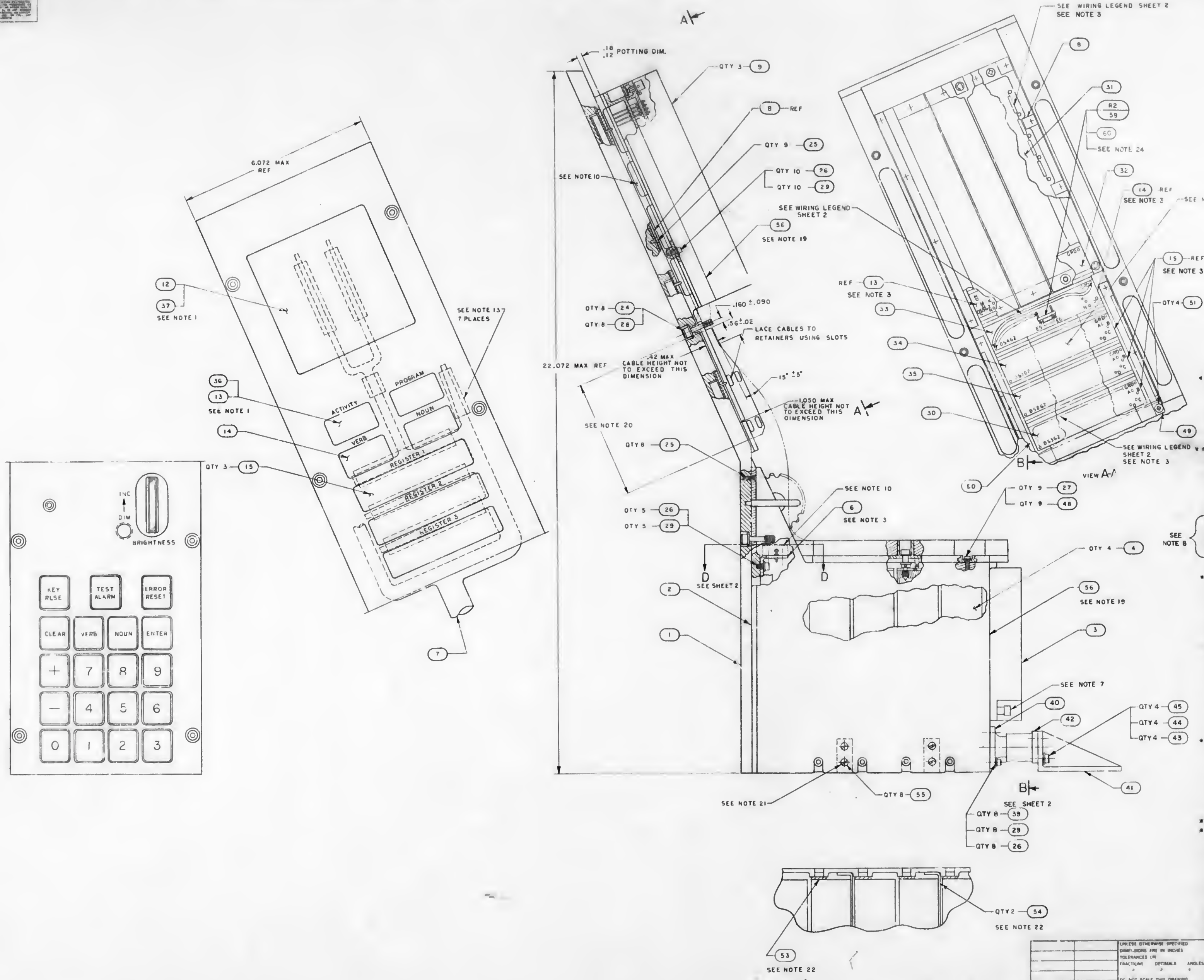
WIRING HARNESS, BRANCHED
AGC DSKY, NAV

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1003550
SCALE 1/1
WT
SHEET 3 OF 3

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 1109 DR CHK	1/4/65	
B	REVISED PER TDRR 1510 DR CHK R.H.S.	7/12/65	

REVISIONS 13860



QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	1006197	INTERCONNECTING DIAGRAM	
* .70	1010416-20	WIRE, ELECTRICAL, STRD, AWG 26	61
1	1004823-011	HOLDER, COMPONENT	60
1	1006750-72	RESISTOR	59
	1003100-011	AGC DSKY NAV PANEL OUTLINE	REF
1	1010812-3	GASKET	58
2	MS24693-PC2	SCREW, FLAT HEAD	57
AR	1006879	THERMOCONDUCTIVE COMPOUND	56
8	MS35233-13	SCREW, PAN HEAD	55
2	1004666-011	STIFFENER	54
** AR	1004665	SHIM	53
1	1004644	WASHER, KNURLED	52
4	MS35200-15	SCREW, FLAT HEAD	51
1	1004636	RETAINER, HOLD DOWN LH	50
1	1004635	RETAINER, HOLD DOWN RH	49
9	NAS 620-4	WASHER, FLAT	48
4	MS16200-1	SCREW, PAN HEAD	47
1	1004628	PLATE, IDENT	46
4	MS35337-80	WASHER, LOCK	45
4	MS15795-807	WASHER, FLAT	44
4	MS16995-26	SCREW, SOCKET HEAD	43
1	1004669-011	FLANGE	42
1	1004670	BRACKET, ANGLE	41
1	1003487-011	ALIGNMENT PIN ASSY	40
8	MS35337-78	WASHER, LOCK	39
* 1.0	1012507-003	CORD, LACING	38
1	100491	PHOTO MA FRONT, INDICATOR DISPLAY	37
1	1004590	PHOTO MA FRONT, PROGRAM DISPLAY	36
1	1004128	PHOTO MA REGISTER NO.2 DISPLAY	35
1	1004126	PHOTO MA REGISTER NO.1 DISPLAY	34
1	1004148	PHOTO MASTER VERB-NOUN DISPLAY	33
1	1004147	PHOTO MASTER PROGRAM DISPLAY	32
1	1004149	PHOTO MASTER INDICATOR DISPLAY	31
1	1004129	PHOTO MA REGISTER NO.3 DISPLAY	30
27	MS15795-803	WASHER, FLAT	29
8	MS15795-808	WASHER, FLAT	28
9	MS16995-10	SCREW, SOCKET HD	27
27	MS16995-9	SCREW, SOCKET HD	26
17	MS35200-13	SCREW, FLAT HD	25
8	1004545	SCREW, CAPTIVE	24
2	MS51053-213	SCREW, SET	23
2	MS16633-4012	RING, RETAINING	22
2	1004119	CONNECTOR, STUD	21
* 3.0	1006737-A2	WIRE, ELECTRICAL	20
1	1003473	THUMB WHEEL ASSY	19
1	1006736	RESISTOR, VAR	18
1	1004648	BRACKET	17
REF	1006167	INTERCONNECTING DIAGRAM	16
3	1006813	INDICATOR, DIGITAL DISPLAY	15
1	1006817	INDICATOR, DIGITAL DISPLAY	14
1	1006818	INDICATOR, DIGITAL DISPLAY	13
1	1006819	INDICATOR, DIGITAL DISPLAY	12
* 25	SEE NOTE 7	SLEEVING	11
* .50	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	10
3	1003530	DECODING MODULE ASSY	9
1	1003534	E/L HOLD DOWN ASSY	8
1	1003550	WIRING HARNESS	7
1	1003548	KEYBOARD MODULE ASSY	6
1	1004668	BRACKET, CABLE SUPPORT	5
4	1003098	RELAY MODULE ASSY	4
1	1003532	POWER SUPPLY ASSY	3
1	100467	HOUSING, RELAY MODULE	2
1	1004141	PANEL, FRONT	1

LIST OF MATERIALS

1003400
NEXT ASSY
USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

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DRAWN R. Lombard DATE
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APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 13 Nov 64

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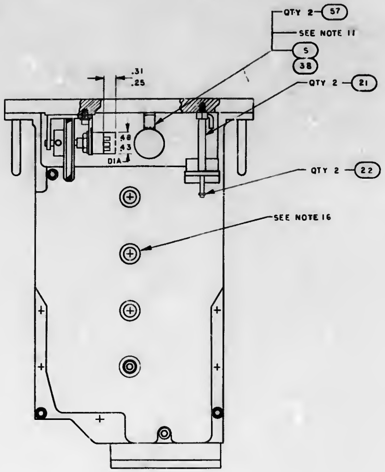
HOUSTON, TEXAS

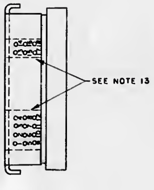
AGC NAV DSKY ASSY

CODE IDENT NO ——
SIZE J
NASA DRAWING NO. 1003551
SCALE 1/1
WT
SHEET 1 OF

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 15109 DR D.A. Clement CHK R.A.E.	2/10/65	HAL
B	REVISED PER TDRR 15110 DR G. Sipka CHK R.A.E.	2/10/65	HAL

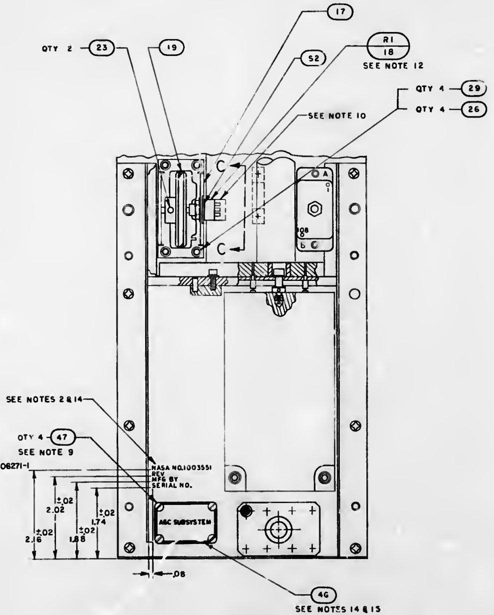
REVISIONS 13260





VIEW DD

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
DS1A1	WHT	30	20	DS1C1
DS2A1				DS2C1
DS3A1				DS3C1
DS4G1				DS4G2
DS3G1				DS3G2
DS5G1				DS5G2
DS2G1				DS2G2
DS1G1	WHT	30	20	DS1G2
DS6G1	BUS & SLV	26	10 & 11	DS6G2
DS6G2				DS6G3
DSGG3				DS6G4
DS6G4	BUS & SLV	26	10 & 11	DS6G5
DS4G2	WHT	26	55	DS4E5



VIEW B B

VIEW CC

NOTES

1. BOND FIND NO. 37 TO FIND NO. 12, FIND NO. 36 TO FIND NO. 13 PER ND1002004
2. MARK .093 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
3. SOLDER PER ND1002071
4. WIRE PER ND1002032
5. AR DENOTES AS REQUIRED
6. MIL-I-631 TYPE F, FORM UA, GRADE A, CLASS 1, CATEGORY 1, AWG SIZE NO. 24
7. * DENOTES LENGTH IN FEET
8. FIND NO. 41 THRU 45 ARE TO BE SUPPLIED & IDENTIFIED PER ND1002019
9. SECURE FIND NO. 47 USING MIL-S 22473
10. ENCAPSULATE PER ND1002217
11. LACE FIND NO.7 TO FIND NO.5 USING FIND NO.38
12. REMOVE LOCK WASHER FROM FIND NO.18. ADJUST FIND NO.18 TO ACHIEVE 2°-3° BACK OFF ON FIND NO.18 BRIGHTNESS STOP
13. SECURE HARNESS IN INDICATED AREAS BY STAKING PER ND.1002004
14. SERIALIZE PER ND1002023
15. FIND NO. 46 TO BE USED FOR IDENTIFICATION OF PART NO.1003400 AND ASSOCIATED DASH NO.
16. MOUNTING TORQUE FOR JACKING SCREWS (1004579) TO BE 15-19 IN. LBS
17. MOUNTING TORQUE FOR JACKING SCREWS (1004583) TO BE 3-4 IN. LBS
18. ** TO BE DETERMINED AT ASSEMBLY
19. APPLY FIND NO. 58 TO MODULE MOUNTING SURFACES
20. POTTING IN THIS AREA TO CONFORM TO CONFIGURATION OF FIND NO. 60
24. BOND FIND NO. 59 TO FIND NO. 60 & FIND NO. 60 TO DS4 PER. ND1002004

REFERENCES

1. 1020105 NAV DSKY TO HANDLING FIXTURE
2. FIXTURE ASSY-FRONT PANEL AGC NAV DSKY

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES OF
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
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DWG NO. CONTRACT
DRAWN R. Zurbach DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. Rhine 11-12-64
MIT APPROVAL

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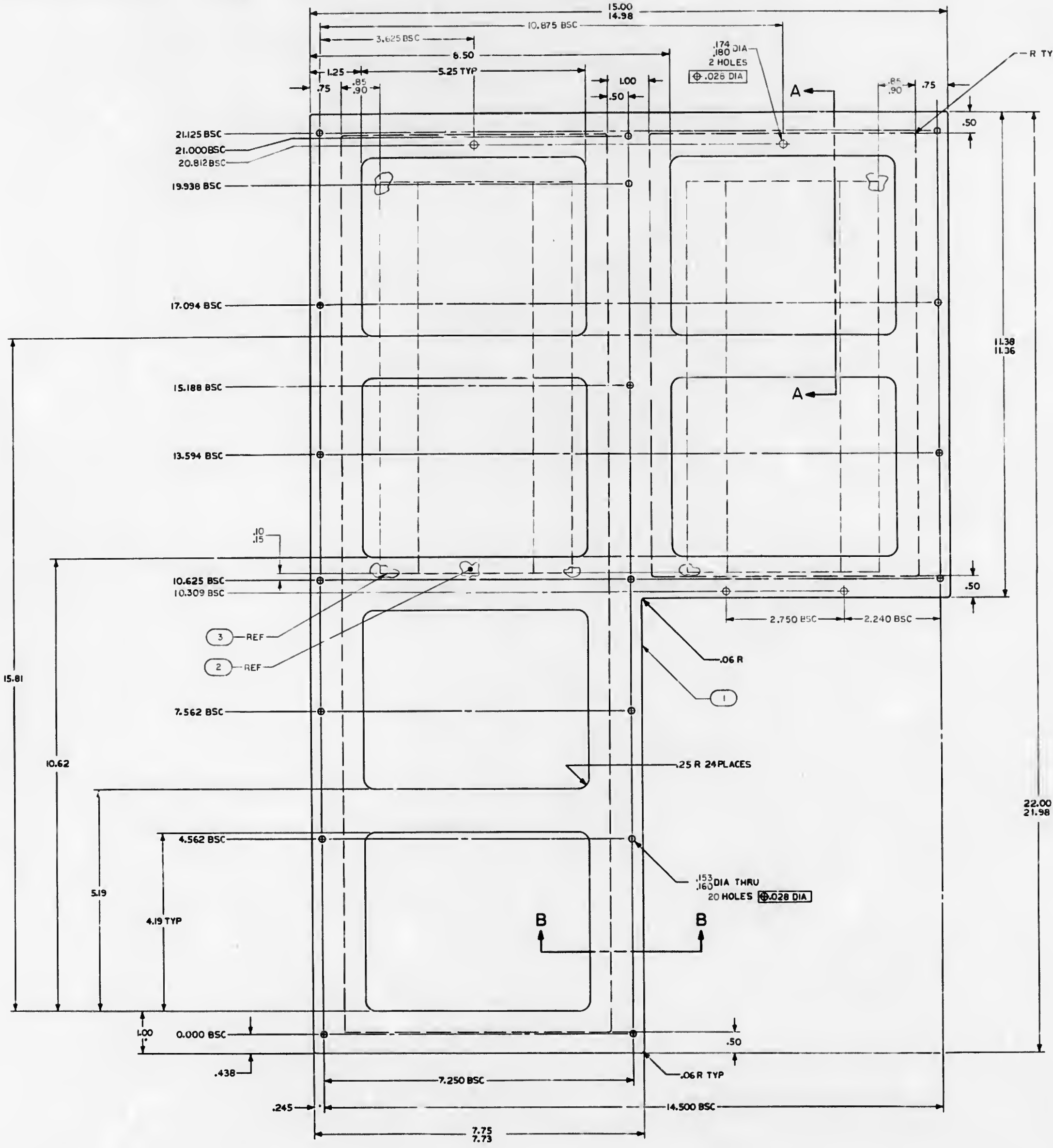
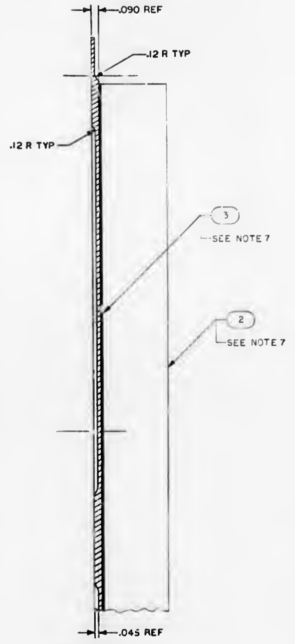
AGC NAV DSKY ASSY

CODE IDENT NO ——— SIZE J NASA DRAWING NO 1003551
SCALE 1/1 WT SHEET 2 OF 2

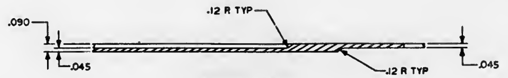
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL





SECTION A-A
SCALE 2-1



SECTION B-B
SCALE 2-1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: 6061-T6 ALUMINUM PER QQ-A-250/11
3. FINISH: PLATE (ELECTRODEPOSITED) ALL SURFACES PER QQ-C-320, CLASS 2, TYPE II, PLATING TO BE .0004 TO .0008 THICK HARDNESS ROCKWELL C60 MINIMUM. DIMENSIONS APPLY AFTER PLATING. SPECIFIED THICKNESS NOT REQUIRED IN ALL HOLES AS LONG AS PLATING IS CONTINUOUS THROUGH EACH HOLE.
4. REMOVE BURRS AND BREAK SHARP EDGES .005/.015
5. 125√ ALL OVER
6. IDENTIFY PER ND 1002019
7. BOND FIND NO.2 TO FIND NO.1 USING FIND NO.3 AS SHOWN

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
AR	1006806-10	INSULATION, TAPE ELEC	3
2	1004764	CUSHION	2
1	1003556-001	COVER	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1003700	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ± .01
XXX ± .005
ANGLES ± —
DO NOT SCALE THIS DRAWING

MATERIAL: SEE NOTE 2
HEAT TREATMENT: SEE NOTE 3
FINAL FINISH: SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN
DATE
CHECKED
APPROVAL
APPROVAL R Blong
NASA APPROVAL
MIT APPROVAL

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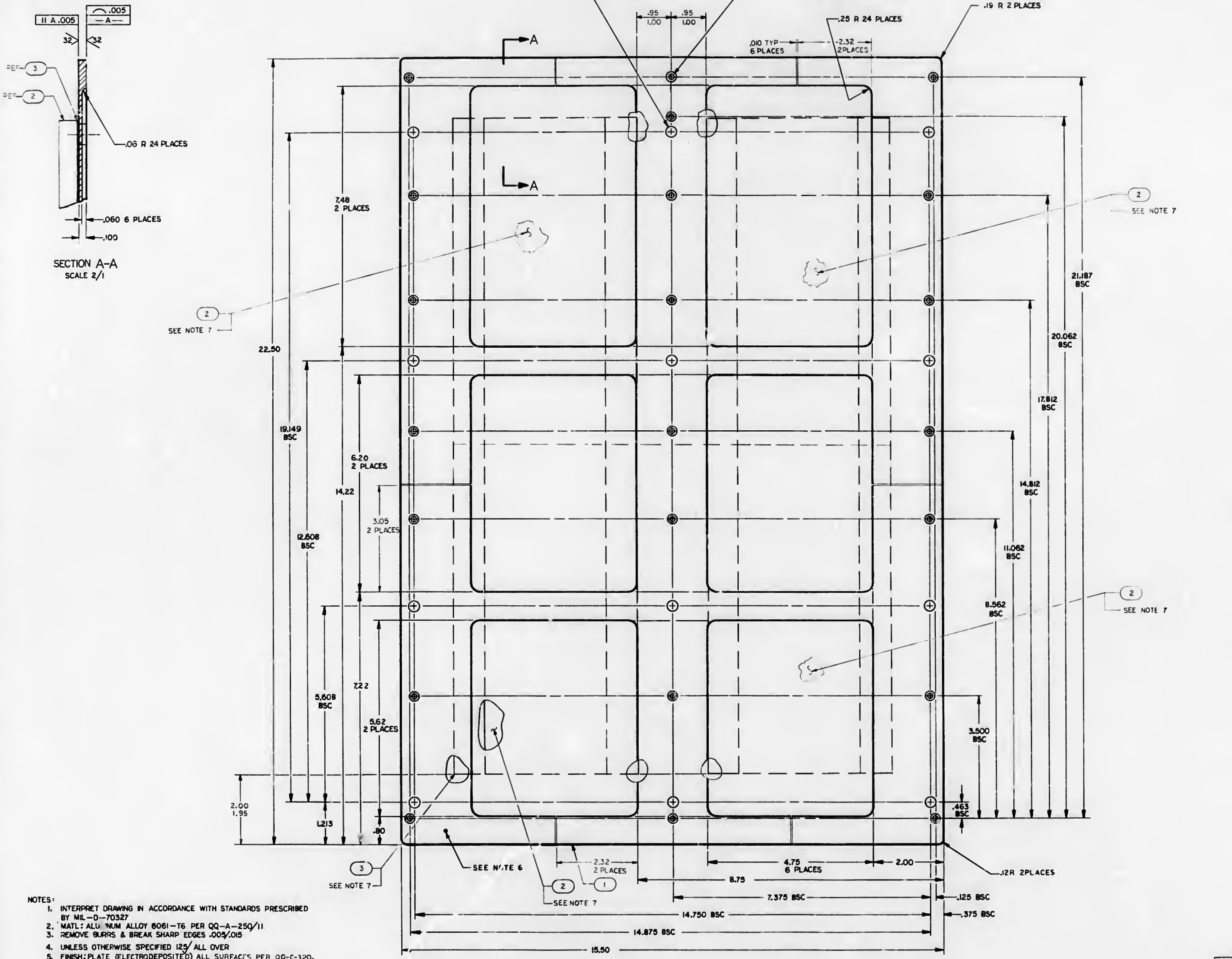
HOUSTON, TEXAS

COVER, TRAY B
AGC COMPUTER

CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO. 1003556
SCALE 1/1
WT —
SHEET 1 OF 1

1003556

SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS			



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL–D–70327
2. MATL: ALUMINUM ALLOY 6061–T6 PER QQ–A–250/11
3. REMOVE BURRS & BREAK SHARP EDGES .005/.015
4. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
5. FINISH: PLATE (ELECTRODEPOSITED) ALL SURFACES PER QQ-C-320, CLASS 2, TYPE II, PLATING TO BE .0004 TO .0008 THICK, HARDNESS ROCKELL C60 MIN. DIMENSIONS APPLY AFTER PLATING. SPECIFIED THICKNESS NOT REQUIRED IN ALL HOLES AS LONG AS PLATING IS CONTINUOUS THROUGH EACH HOLE.
6. IDENTIFY WITH DRAWING NO. AND REVISION PER ND1002019, APPROXIMATELY WHERE INDICATED ON FARSIDE
7. BOND FIND NO. 2 TO FIND NO. 1 USING FIND NO. 3 AS SHOWN

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
A R	1006806-10	INSULATION TAPE, ELECTRICAL	3
4	1004763	CUSHION	2
1	1003557-001	COVER	1
011	LIST OF MATERIALS		

1003720	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XXX±.005 XX±.01 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 5

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DRAWN J.P. Leonard DATE [illegible]
CHECKED [illegible] 9 Jul 65
APPROVAL
APPROVAL R. Alonso
NASA APPROVAL
MIT APPROVAL [illegible] Jul 65

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COVER, TRAY A
AGC COMPUTER

CODE IDENT NO. 80230
SIZE E
NASA DRAWING NO 1003557
SCALE 1/1
WT —
SHEET 1 OF 1

1003557

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REVISIONS 24033

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 25312				
B		REVISED PER TDRR 31515			10/31/6	
C		REVISED PER TDRR 33809			6/ /67	
D		REVISED PER TDRR 34634			10/9/67	

DUMMY DRAWING

SEE INSTRUCTION DRAWING

NO. 1004879 -011,-021,-031,&-041 CONFIGURATION

AND INSTRUCTION DRAWING 1023602 FOR-051 CONFIGURATION

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED

△3 DENOTES LENGTH IN FEET

QTY REQD 071	QTY REQD 061	QTY REQD 051	QTY REQD 041	QTY REQD 031	QTY REQD 021	QTY REQD 011	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
X	X	X	X	X	—	—	1005789	AGC MAIN DSK OUTLINE	REF
—	—	—	—	—	X	X	1003480	AGC MAIN DSK OUTLINE	REF
X	X	X	X	X	X	X	1005770	INTERCONNECTION FLOW DIA	REF
X	X	X	X	X	X	X	1005753	INTERCONNECTION DIAGRAM	REF
1	—	—	—	—	—	—	1003220-021	G&N FAIL DETECT ASSY	52
4	—	4	—	—	—	—	1004920	STRIP, GROUNDING	51
4	—	4	—	—	—	—	1004919-002	WASHER, VIBRATION	50
4	—	4	—	—	—	—	1004921	PAD, VIBRATION	49
—	1	1	1	1	1	1	1003220-011	G&N FAIL DETECT ASSY	48
2	2	2	2	2	2	2	1006783-19	SCREW BUTTON HD, HEX SOC	47
1	1	1	—	1	—	—	1004779	PAD, RUBBER	46
1	1	1	1	1	—	—	1004682	HOUSING, FRONT PANEL	45
1	—	1	—	1	1	—	1003809-011	E L FRAME & HARNESS ASSY	44
4	4	4	—	4	4	4	1011625-32	SCREW, SOCKET HEAD	43
2	2	2	—	2	2	2	1004776	SHIM	42
1	1	1	1	1	1	1	1010812-1	GASKET	41

LIST OF MATERIALS

	QTY REQD 071	QTY REQD 061	QTY REQD 051	QTY REQD 041	QTY REQD 031	QTY REQD 021	QTY REQD 011	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	AR	AR	AR	AR	AR	AR	AR	1006879	THERMOCONDUCTIVE COMPOUND	40
	AR	AR	AR	AR	AR	AR	AR	1004665	SHIM	39
	2	2	2	2	2	2	2	1004666-011	STIFFENER	38
	8	8	8	8	8	8	8	MS51957-13	SCREW, PAN HEAD	37
	9	9	9	9	9	9	9	MS15795-805	WASHER, FLAT	36
	—	4	—	4	—	4	4	MS15795-808	WASHER, FLAT	35
	2	2	2	2	2	2	2	MS51959-18	SCREW, FLAT HEAD	34
	4	4	4	4	4	4	4	MS51957-1	SCREW, PAN HEAD	33
	13	13	13	13	13	13	9	MS15795-804	WASHER, FLAT	32
	18	16	18	18	18	18	18	MS16995-10	SCREW, SOCKET HEAD	31
	1	1	1	1	1	1	1	MS16995-19	SCREW, SOCKET HEAD	30
	12	12	12	12	12	12	12	MS16995-9	SCREW, SOCKET HEAD	29
	3	3	3	3	3	3	3	MS16995-17	SCREW, SOCKET HEAD	28
	4	4	4	4	4	4	4	MS16995-16	SCREW, SOCKET HEAD	27
	—	—	—	—	—	4	4	1004545	SCREW, CAPTIVE	26
	2	2	2	2	2	2	2	MS51053-213	SCREW, SET	25
	20	18	20	20	20	20	20	MS15795-803	WASHER FLAT	24
	AR	AR	AR	AR	AR	AR	AR	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	23
	1	1	1	1	1	1	1	MS25281-2	CLAMP, CABLE	22
△3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1012507-003	LACING, CORD	21
	1	1	1	1	1	1	1	1004628	PLATE, IDENT	20
	1	1	1	1	1	1	1	1003554-011	KEYBOARD MODULE, D18	19
	1	1	1	1	1	1	1	1006820-000	SWITCH, TOGGLE	18
	11	—	11	11	11	11	11	NAS620C4	WASHER, FLAT	17
	6	6	6	6	6	6	6	MS35337-78	WASHER, LOCK	16
	1	1	1	1	1	1	1	MS35338-79	WASHER, LOCK	15
	2	2	2	2	2	2	2	MS35649-44	NUT, PLAIN	14
	1	1	1	1	1	1	1	MS35649-64	NUT, PLAIN	13
	2	2	2	6	2	2	2	MS16995-11	SCREW, SOCKET HEAD	12
	1	1	1	1	1	1	1	1004648	BRACKET, POT	11
	—	1	—	1	—	—	1	1003809-000	E/L FRAME & HARNESS ASSY	10
	1	1	1	1	1	1	1	1004644	WASHER, KNURLED	9
	3	3	3	3	3	3	3	1003817-011	DECODING MODULE ASSY	8
	1	1	1	1	1	1	1	1006736	RESISTOR, VARIABLE	7
	1	1	1	1	1	1	1	1003473	THUMB WHEEL ASSY	6
	1	1	1	1	1	1	1	1004573	FRAME INDICATOR DISP	5
	4	4	4	4	4	4	4	1003824-011	RELAY MODULE ASSY	4
	1	1	1	1	1	1	1	1003811-011	POWER SUPPLY ASSY	3
	1	1	1	1	1	1	1	1004686	HOUSING, RELAY TRAY	2
	—	—	—	—	—	1	1	1004759	HOUSING, FRONT PANEL	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN B.R. Fuller 1 NOV 65
CHECKED
APPROVED
APPROVED Ed C Hall
APPROVED MIT W. Kupfer 16
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC MAIN DSKY ASSY
100 SERIES

CODE IDENT NO	SIZE	DRAWING NO.
80230	D	1003563

SCALE NONE

SHEET OF 1

1003563

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REVISIONS 24033						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 25312			1/20/66	

DUMMY DRAWING
SEE INSTRUCTION DRAWING
NO. 1004880
FOR CONFIGURATION

QTY REQD 021	QTY REQD 011	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
~~—~~	✕	~~1003430~~	~~MAIN DSKY OUTLINE~~	REF
~~—~~	~~1~~	~~1004672~~	~~HOUSING, RELAY MODULE~~	~~59~~
~~—~~	~~1~~	~~1004151-011~~	~~HOUSING, FRONT PANEL~~	~~58~~
—	3	1003530	DECODING MODULE ASSY	57
2	2	1006783-19	SCREW, BUTTON HD, CAP	56
~~—~~	~~1~~	~~1003549~~	~~KEYBOARD MODULE D18~~	~~55~~
1	1	1003220-011	ASSY, G & N FAILURE DET	54
1	1	1004779	PAD, RUBBER	53
4	4	1004654	GASKET	52
✕	✕	1005789	MAIN DSKY OUTLINE	REF
6	6	1004653	GASKET	51
1	1	1004652	GASKET	50
2	2	1004677	SHIM	49
2	2	1006783-19	SCREW, BUTTON HEAD, HEX SOCKET	48
1	1	1010812-1	GASKET	47
AR	AR	1006879	THERMOCONDUCTIVE COMPOUND	46
AR	AR	1004665	SHIM	45
2	2	1004666	STIFFNER	44
8	8	MS35233-13	SCREW, PAN HEAD	43
1	1	MS16995-19	SCREW, SOCKET HEAD	42
2	2	MS35337-78	WASHER, LOCK	41
2	2	MS35200-17	SCREW, FLAT HEAD	40
2	2	MS35649-44	NUT, PLAIN	39
△3 1.5	1.5	1012507-003	LACING, CORD	38
1	1	MS35649-64	NUT, PLAIN	37
1	1	MS35338-79	WASHER, LOCK	36
1	1	1004628	PLATE, IDENT	35
1	1	MS25281-4	CLAMP, CABLE	34
4	4	MS16200-1	SCREW, PAN HEAD	33
2	2	MS51053-213	SCREW, SET	32
1	1	MS15795-807	WASHER, FLAT	31
AR	AR	SEE NOTE 4	SLEEVING	30

LIST OF MATERIALS

QTY REQD 021	QTY REQD 011	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
AR	AR	QQ-W-343 TYPE S		WIRE, SOLID AWG 26	29
1	1	1004649		INSULATOR, FRONT	28
24	24	MS16995-10		SCREW, CAP, SOCKET HEAD	27
9	9	MS15795-804		WASHER, FLAT	26
1	1	MS35216-40		SCREW, PAN HEAD	25
1	1	1003567-011		KEYBOARD MODULE, D18	24
20	20	MS15795-803		WASHER, FLAT	23
12	12	MS16995-9		SCREW, CAP, SOCKET HEAD	22
1	1	1006820		SWITCH, TOGGLE	21
1	1	1004648		BRACKET, POT	20
1	1	1006736		RESISTOR, VARIABLE	19
1	1	MS25281-14		CLAMP, CABLE	18
1	1	1003483		WIRING HARNESS	17
1	1	1006814		INDICATOR, DIGITAL DISPLAY	16
1	1	1003543		GASKET & FRAME ASSY	15
1	1	1003473		THUMB WHEEL ASSY	14
1	1	1003532		POWER SUPPLY ASSY	13
9	9	MS15795-805		WASHER, FLAT	12
3	3	MS16995-17		SCREW, SOCKET HEAD	11
4	4	MS16995-16		SCREW, SOCKET HEAD	10
1	1	1004686		HOUSING, RELAY TRAY	9
4	4	1003098		RELAY MODULE ASSY	8
1	1	1004785		HOUSING, FRONT PANEL	7
1	1	1004644		WASHER, KNURLED	6
13	13	NAS620C4		WASHER, FLAT	5
~~4~~	~~4~~	~~MS15795-808~~		~~WASHER, FLAT~~	~~4~~
~~4~~	~~4~~	~~1004545~~		~~SCREW, CAPTIVE~~	~~3~~
3	—	1003817-011		DECODING MODULE ASSY	2
1	1	1004588		INSULATOR, INDICATOR DISPLAY	1

LIST OF MATERIALS

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED
△3 DENOTES LENGTH IN FEET
4. MIL-I-631 TYPE F, FORM Ua, GRADE a, CLASS I, CATEGORY I. AWG NO. 24

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN µf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN Ed Hilliard 3 Nov 65
CHECKED 3 Nov 65
APPROVED
APPROVED Eldon C Hall 3 Nov 65
APPROVED MIT 16 Nov 65
A. C. METZGER
APPROVED MSC
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

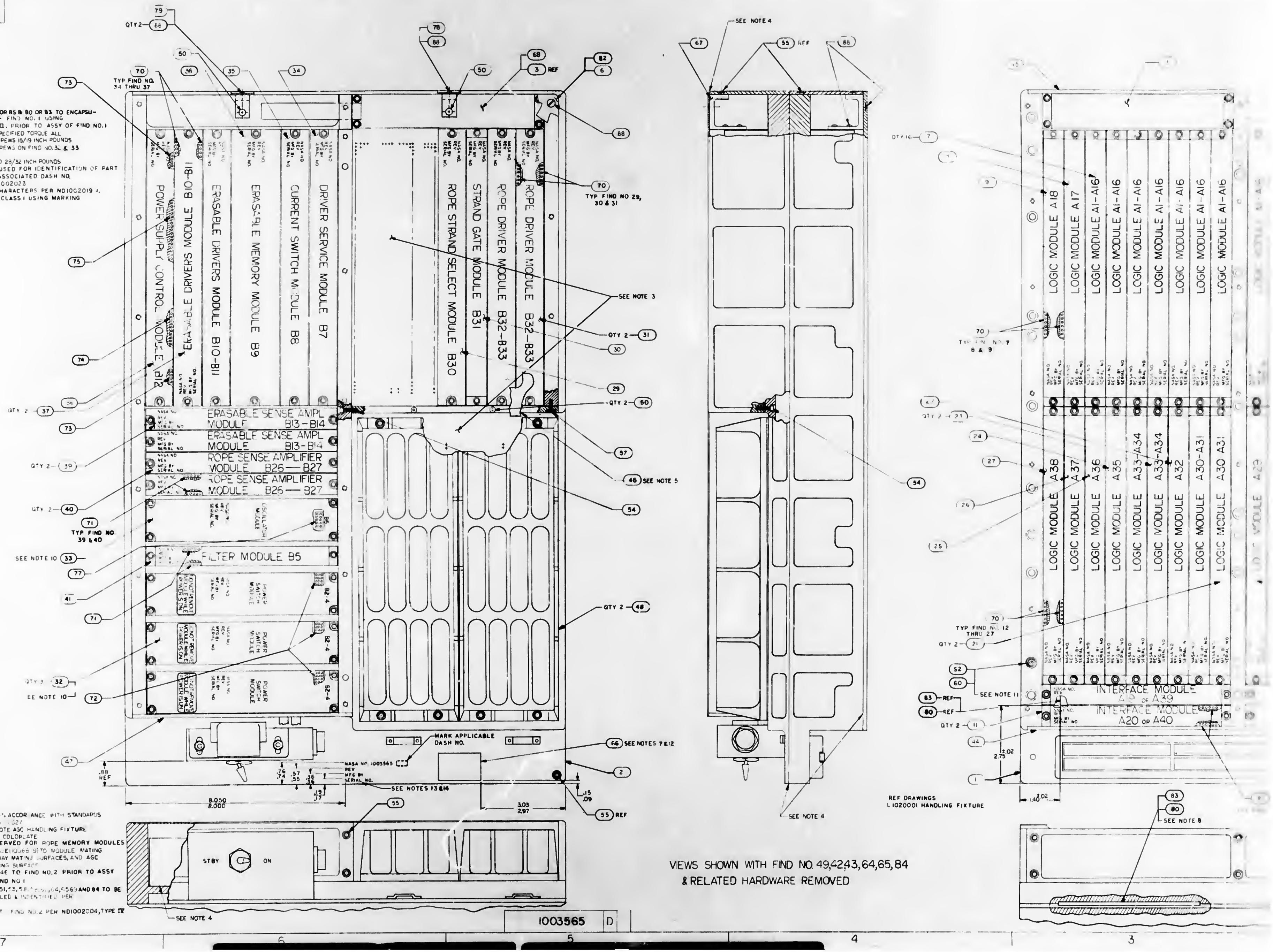
AGC KEYBOARD & DISPLAY
MAIN PANEL

CODE IDENT NO. 80230
SIZE C
DRAWING NO. 1003564
SCALE NONE
SHEET 1 OF 1

MODERN BLUE PRINT CO. D-19550

NOTES (CONT)

8. BOND FIND NO. 28 OR 85 & 80 OR 83 TO ENCAPSULATED SURFACE OF FIND NO. 1 USING MIL-A-5092 TYPE II. PRIOR TO ASSY OF FIND NO. 1
9. UNLESS OTHERWISE SPECIFIED TORQUE ALL MODULE MOUNTING SCREWS 15/19 INCH POUNDS
10. TORQUE MOUNTING SCREWS ON FIND NO. 32 & 33 TO 4/6 INCH POUNDS
11. TORQUE FIND NO 52 TO 28/32 INCH POUNDS
12. FIND NO 66 TO BE USED FOR IDENTIFICATION OF PART NO. 1003770 AND ASSOCIATED DASH NO.
13. SERIALIZE PER ND1002023
14. MARK .08 .10 HIGH CHARACTERS PER ND1002019 & ND1002122 TYPE II CLASS I USING MARKING INK 1000271-11



VIEWS SHOWN WITH FIND NO. 49, 42, 43, 64, 65, 84 & RELATED HARDWARE REMOVED

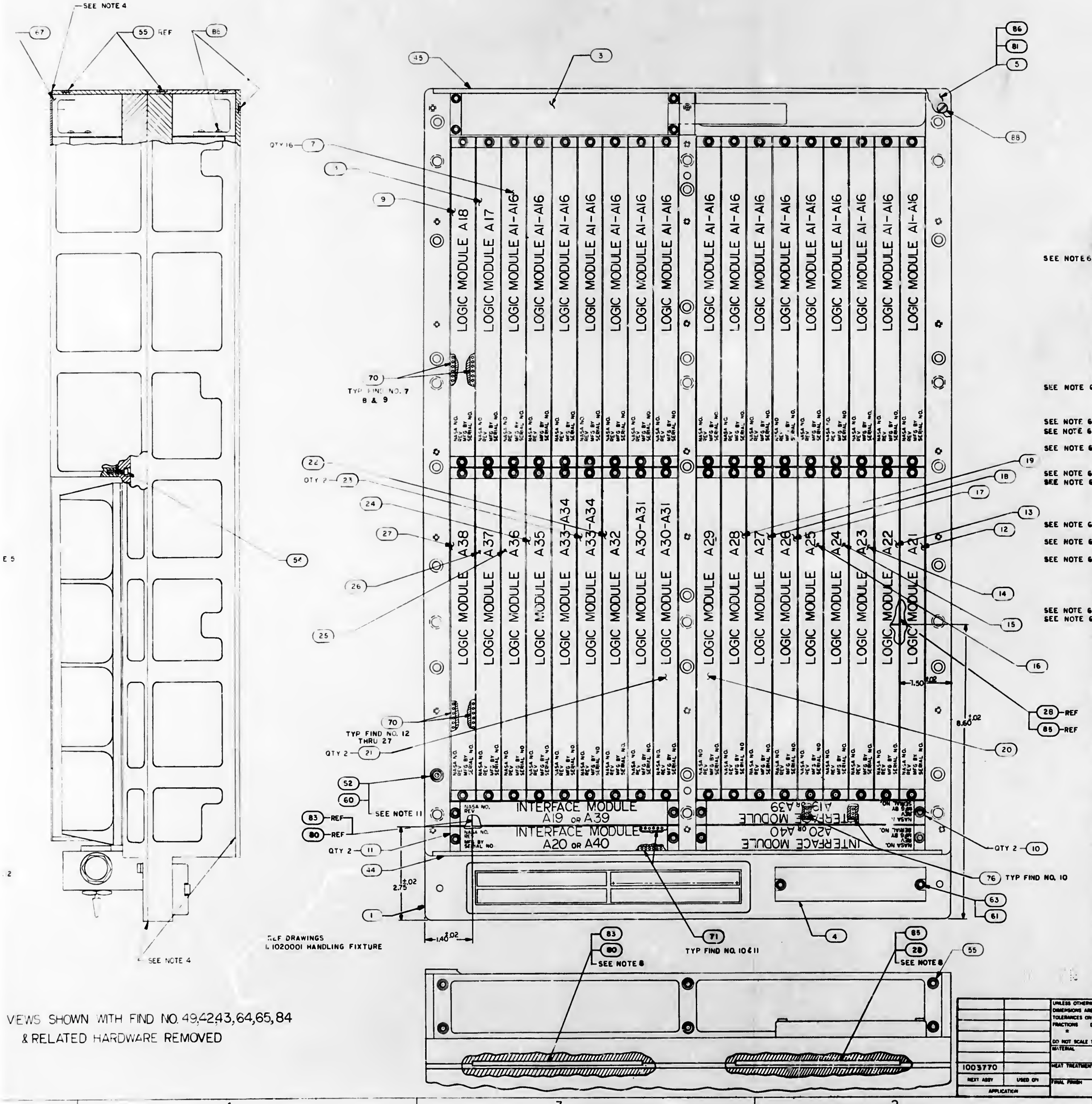
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-STD-100
2. PHANTOM LINES DENOTE AGC HANDLING FIXTURE COLDPLATE OR NAA COLDPLATE
3. AREAS NOTED RESERVED FOR ROPE MEMORY MODULES
4. ADD SILICONE GREASE (10066 9) TO MODULE MATING METAL SURFACES, TRAY MATING SURFACES, AND AGC TO COLDPLATE MATING SURFACE
5. ASSEMBLE FIND NO 46 TO FIND NO. 2 PRIOR TO ASSY OF FIND NO 2 TO FIND NO 1
6. FIND NO 42, 43, 49, 51, 53, 58, [illegible], 64, 65, 69 AND 84 TO BE SHIPPED UNASSEMBLED & IDENTIFIED PER ND1002019
7. BOND FIND NO. 66 TO FIND NO. 2 PER ND1002004, TYPE IV

1003565 D

1003565 D

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 25770 DR CHK APPD		
B	REVISE PER TDRR 31515 DR CHK APPD		
C	REVISED PER TDRR 30987 DR CHK APPD		
D	REVISED PER TDRR 33422 DR CHK		



VIEWS SHOWN WITH FIND NO. 49,42,43,64,65,84
& RELATED HARDWARE REMOVED

	QTY REQD	QTY REQD	QTY REQD	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	041	031	021	011	LIST OF MATERIALS		
	47	47	47	47	1006393-003	SCREW, MACHINE PAN HD	[illegible]
	~~47~~	~~47~~	~~47~~	~~47~~	~~1006393-001~~	~~SCREW, MACHINE PAN HD~~	~~87~~
	☒	1	☒	☒	1003574-011	COVER, TRAY A THERMAL	86
	1	☒	1	☒	1004766	CUSHION, TRAY A & B	85
SEE NOTE 6	☒	☒	1	☒	1004285	FRONT CLOSE - OUT PANEL	84
	1	☒	1	☒	1004765	CUSHION, TRAY A & B	83
	1	☒	1	☒	1003556-011	COVER, TRAY B	82
	1	☒	1	☒	1003557-011	COVER, TRAY A	81
	☒	1	☒	1	1004773	CUSHION TRAY A & B	80
	1	1	1	1	1004698-011	BRACKET	79
	1	1	1	1	1004768-011	BRACKET	78
	1	1	1	1	1004850	GASKET-E	77
	4	4	4	4	1004849-004	GASKET-D	76
	1	1	1	1	1004849-003	GASKET-D	75
	1	1	1	1	1004849-002	GASKET-D	74
	2	2	2	2	1004849-001	GASKET-D	73
	3	3	3	3	1004848	GASKET-C	72
	18	18	18	18	1004847	GASKET-B	71
	90	90	90	90	1004846	GASKET-A	70
SEE NOTE 6	1	1	1	1	1004730	GASKET, 360 PIN CONN.	69
	2	2	2	2	1004731	GASKET, 215 PIN CONN.	68
	2	2	2	2	1004739	BRACKET, TRAY A AND B	67
	1	1	1	1	1004657	PLATE, IDENTIFICATION	66
SEE NOTE 6	1	1	1	1	1003734	FRONT PANEL MOUNT ASSY, LEFT SIDE	65
SEE NOTE 6	1	1	1	1	1004728	SHIELD, STANDBY SWITCH AGC	64
	2	2	2	2	1004722-2	SCREW CAPTIVE	63
SEE NOTE 6	2	2	2	2	MS15795-808	WASHER, FLAT	62
	2	2	2	2	NAS620C8	WASHER, FLAT	61
	22	22	22	22	NAS620C10	WASHER, FLAT	60
SEE NOTE 6	8	8	8	8	1010630-40	SCREW, FL HD, HEX SOCKET	59
SEE NOTE 6	2	2	2	2	1010630-39	SCREW, FL HD, HEX SOCKET	58
	2	2	2	2	1006783-22	SCREW BUTTON HD, HEX SOCKET	57
	~~47~~	~~47~~	~~47~~	~~47~~	~~1006783-18~~	~~SCREW BUTTON HD, HEX SOCKET~~	~~56~~
	22	22	22	22	1006783-21	SCREW BUTTON HD, HEX SOCKET	55
	3	3	3	3	MS16995-11	SCREW SOCKET HD, HEX	54
SEE NOTE 6	4	4	4	4	MS16996-10	SCREW SOCKET HD HEX	53
	22	22	22	22	MS16996-13	SCREW SOCKET HD HEX	52
SEE NOTE 6	2	2	2	2	MS16996-13	SCREW SOCKET HD HEX	51
	4	4	4	4	1006783-19	SCREW BUTTON HD, HEX SCOKET	50
SEE NOTE 6	1	1	☒	1	1004783	FRONT CLOSE-OUT PANEL	49
	2	2	2	2	1004734	COVER, ROPE	48
	1	1	1	1	1004716	FRONT PLATE, LEFT SIDE TRAY B	47
	1	1	1	1	1003555-011	MID PLATE, RIGHT SIDE TRAY B	46
	1	1	1	1	1004762	REAR PLATE TRAY A&B	45
	1	1	1	1	1004715	FRONT PLATE TRAY A	44
SEE NOTE 6	1	1	1	1	1003730	SUPPORT, FRONT PANEL	43
SEE NOTE 6	1	1	1	1	1003735	FRONT PANEL MOUNT ASSY, RIGHT SIDE	42
	1	1	1	1	1003704-011	FILTER MODULE	41
	2	2	2	2	1003154	ROPE SENSE AMPL MODULE	40
	2	2	2	2	1003463	ERASABLE SENSE AMPL MODULE	39
	1	1	1	1	1003150	POWER SUPPLY CONTROL MODULE	38
	2	2	2	2	1003139	ERASABLE DRIVER MODULE	37
	1	1	1	1	1003069	ERASABLE MEMORY MODULE	36
	1	1	1	1	1003153	CURRENT SWITCH MODULE	35
	1	1	1	1	1003165	DRIVER SERVICE MODULE	34
	1	1	1	1	1003527	OSCILLATOR MODULE	33
	3	3	3	3	1003113-011	POWER SWITCH MODULE	32
	2	2	2	2	1003178	ROPE DRIVER MODULE	31
	1	1	1	1	1003485	STRAND GATE MODULE	30
	1	1	1	1	1003132	ROPE STRAND SELECT MODULE	29
	☒	1	☒	1	1004774	CUSHION, TRAY A & B	28
	1	1	1	1	1003174-24	LOGIC MODULE A38	27
	1	1	1	1	1003812-17	LOGIC MODULE A37	26
	1	1	1	1	1003174-21	LOGIC MODULE A36	25
	1	1	1	1	1003174-15	LOGIC MODULE A35	24
	2	2	2	2	1003174-14	LOGIC MODULE A33-34	23
	1	1	1	1	1003174-13	LOGIC MODULE A32	22
	2	2	2	2	1003174-12	LOGIC MODULE A30-A31	21
	1	1	1	1	1003174-30	LOGIC MODULE A29	20
	1	1	1	1	1003174-27	LOGIC MODULE A28	19
	1	1	1	1	1003174-25	LOGIC MODULE A27	18
	1	1	1	1	1003174-20	LOGIC MODULE A26	17
	1	1	1	1	1003174-7	LOGIC MODULE A25	16
	1	1	1	1	1003174-6	LOGIC MODULE A24	15
	1	1	1	1	1003174-5	LOGIC MODULE A23	14
	1	1	1	1	1003174-23	LOGIC MODULE A22	13
	1	1	1	1	1003174-28	LOGIC MODULE A21	12
	2	2	2	2	1003709	INTERFACE MODULE A20 OR A40	11
	2	2	2	2	1003708-011	INTERFACE MODULE A19 OR A39	10
	1	1	1	1	1003174-22	LOGIC MODULE A18	9
	1	1	1	1	1003174-26	LOGIC MODULE A17	8
	16	16	16	16	1003074	LOGIC MODULE A1-A16	7
	☒	1	☒	1	1003556-021	COVER, TRAY B	6
	☒	☒	☒	1	1003557-021	COVER, TRAY A	5
	1	1	1	1	1003732	COVER, POTTED	4
	1	1	1	1	1003702-000	CABLE ASSY	3
	1	1	1	1	1003701-011	TRAY B WIRED ASSY	2
	1	1	1	1	1003703-011	TRAY A WIRED ASSY	1

NEXT ASSY	USED ON
1003770	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

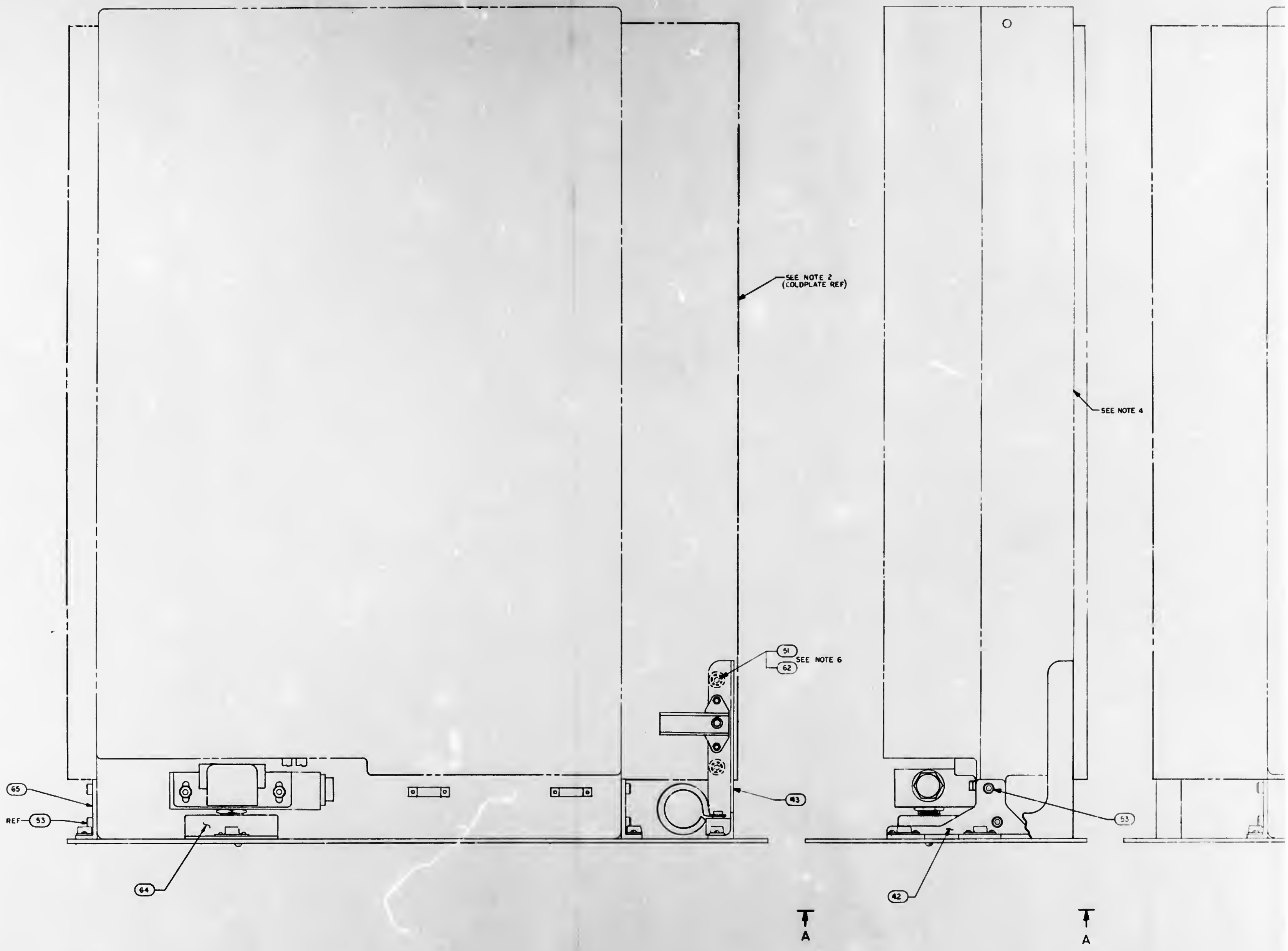
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN DATE 21 OCT 65
CHECKED 27 Oct 65
APPROVAL
APPROVAL 28 Oct 65
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

COMPUTER ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO 1003565
SCALE 1/1
WT
SHEET 1 OF 2

1003565

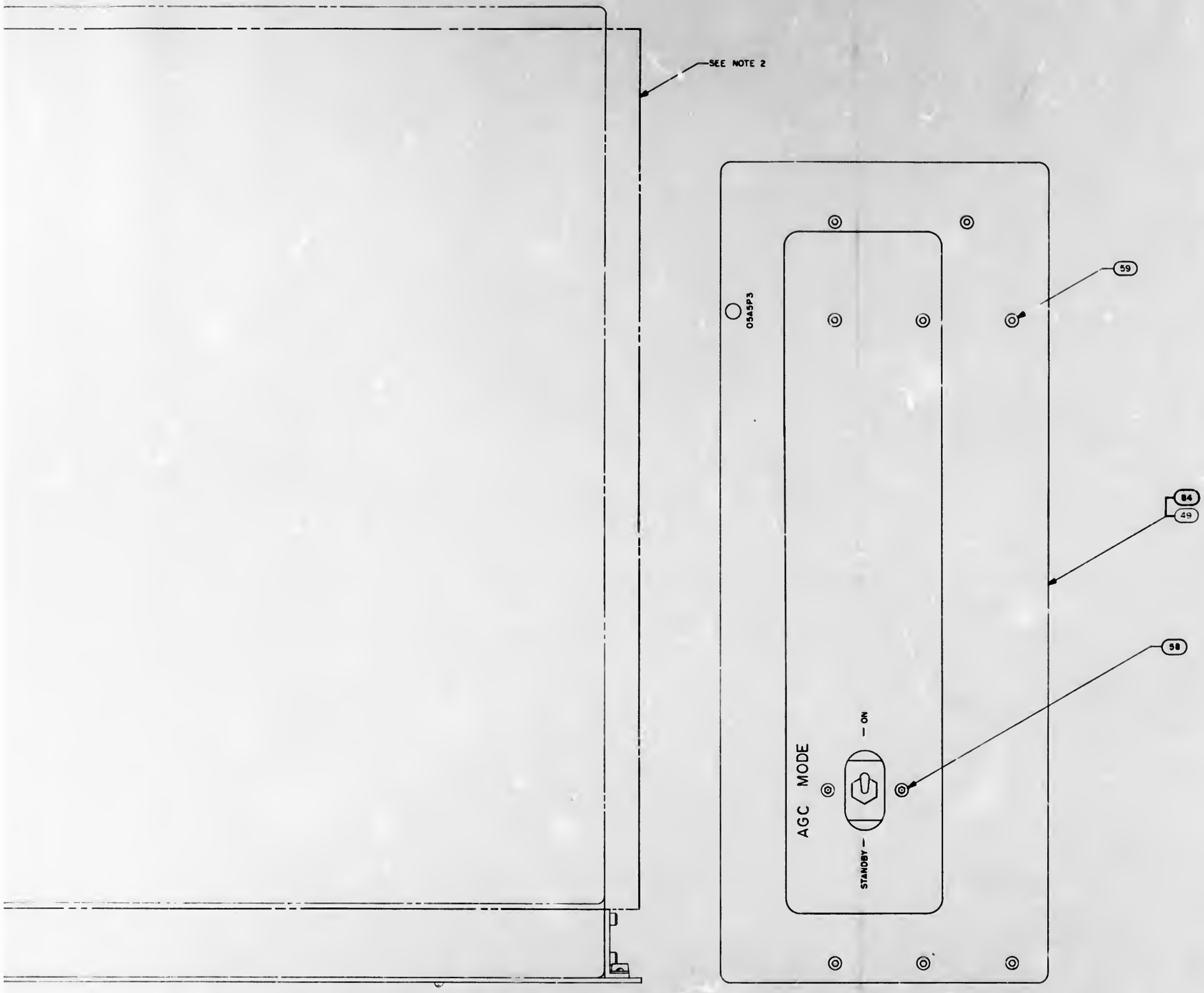


SEE NOTE 2 (COLDPLATE REF)
SEE NOTE 4
51
62
SEE NOTE 6
43
65
REF 53
64
53
42
A
A

1003565 D

1003565 D

SYM	REVISIONS DESCRIPTION		
A	REVISED RER TDRR 25770 DR CHK APPD		
B	REVISED PER TDRR 31515 DR CHK APPD		
C	REVISED PER TDRR 30987 DR CHK APPD		
D	REVISED PER TDRR 33 2 DR CHK		



VIEW A-A

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NEXT ASSY USED ON
APPLICATION

MIT
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CAMBRIDGE MASS
DRAWN R.B. DATE 21OCT65
CHECKED
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NASA APPROVAL A. C. METZGER
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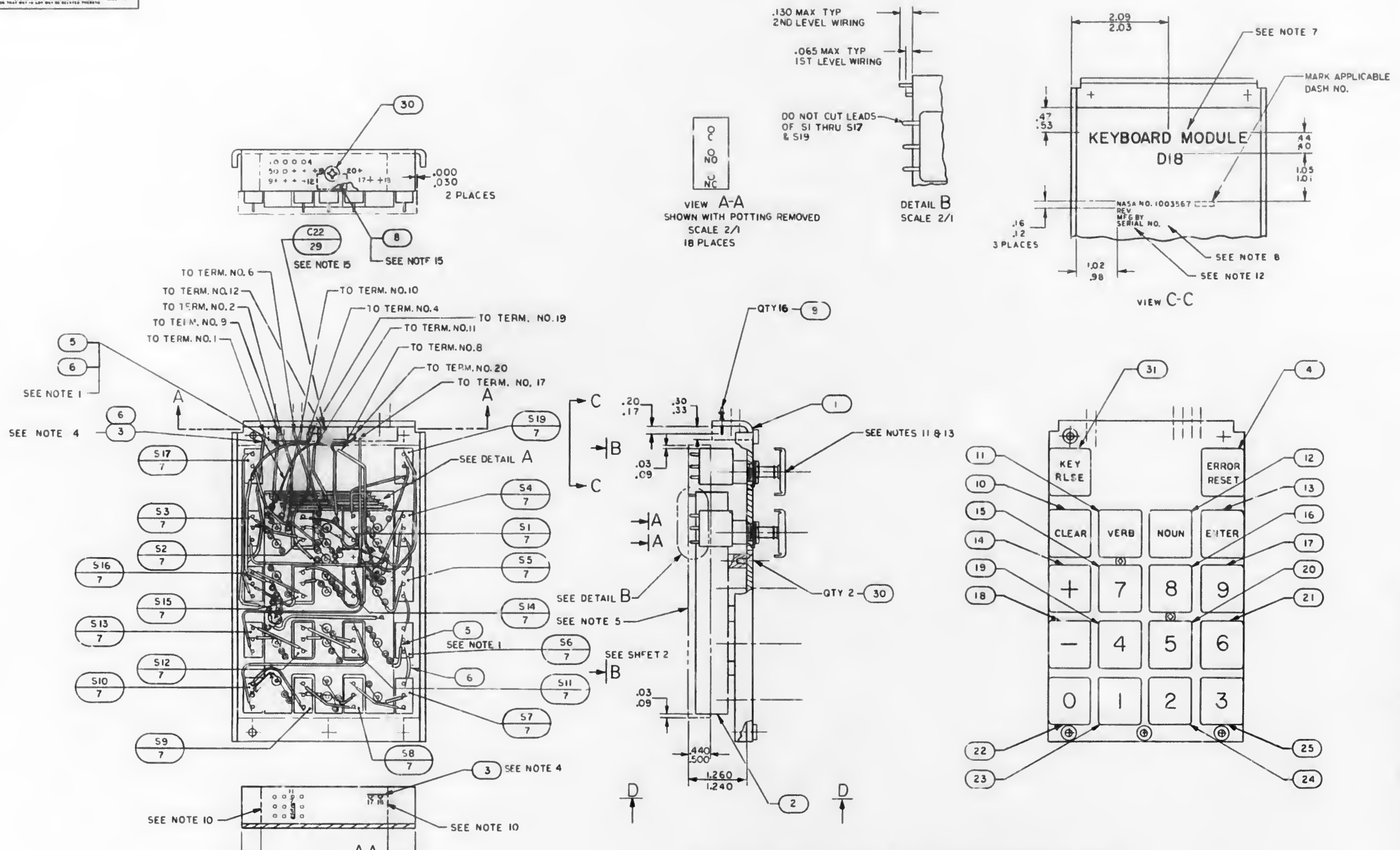
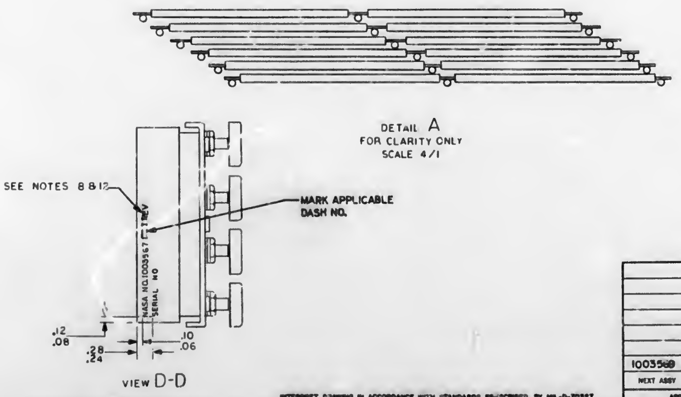
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

COMPUTER
ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO 1003565
SCALE 1/1
WT
SHEET 2 OF 2

SYM	DESCRIPTION	DATE	APPROVED





NOTES:

1. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 WHEN USING FIND NO. 5
2. WORKMANSHIP, FABRICATION, AND INSPECTION REQUIREMENTS PER ND 1002069
3. STAKE COMPONENTS TO FIND NO. 2 PER ND 1002009
4. SOLDER ALL CONNECTIONS TO FIND NO. 9 PER ND1002071 UNLESS OTHERWISE SPECIFIED
5. ENCAPSULATE MODULE PER ND1002036 TO DIMENSIONS SHOWN
6. ✱ DENOTES LENGTH IN FEET
7. MARK .250 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
8. SERIALIZE PER ND1002023
9. BRUSH COAT THIS SURFACE PER ND 1002009 TO A MINIMUM HEIGHT OF .015 ABOVE COMPONENT LEADS & FEEDTHRUS
10. ENCAPSULATE THIS AREA PER ND1002217
11. FIND NO. 7 SHALL MEET THE FOLLOWING ACTUATION REQUIREMENTS BEFORE AND AFTER ENCAPSULATION PER NOTE 5:
    PRETRAVEL: .093 MIN .188 MAX
    OVERTRAVEL: .060 MIN
12. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 1 USING MARKING INK 1006271-1
13. MOUNTING TORQUE ON FIND NO. 7 TO BE 17-19 INCH POUND
14. BOND FIND NO. 35 TO FIND NO. 2 PER ND 1002004, TYPE V
15. BOND FIND NO. 29 TO FIND NO. 8 AND FIND NO. 8 TO FIND NO. 1 PER ND1002008, TYPE V

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	☒	1005790	SCHEMATIC	REF
	1	1006717-24	CAPACITOR, FIXED, CERAMIC	38
	1	1010406-7	COIL, R F, CHOKE	37
	6	1006750-1	RESISTOR, FIXED FILM	36
	1	1004605	INSULATOR, PLATE	35
	1	1006750-56	RESISTOR, FIXED FILM	34
	1	1006752	TRANSISTOR, SILICON, TYPE NPN	33
	2	1006750-32	RESISTOR FIXED FILM	32
	1	1004602-19	BUTTON, KEYBOARD	31
	3	MS51959-13	SCREW, FLAT HEAD	30
	2	1006755-79	CAPACITOR, FIXED, TANTALUM	29
	45	1006751	SEMI CONDUCTOR DEVICE, DIODE	28
	19	1006755-57	CAPACITOR, FIXED, TANTALUM	27
	2	1006750-39	RESISTOR, FIXED FILM	26
	1	1004602-16	BUTTON, KEYBOARD	25
	1	1004602-15	BUTTON, KEYBOARD	24
	1	1004602-14	BUTTON, KEYBOARD	23
	1	1004602-13	BUTTON, KEYBOARD	22
	1	1004602-12	BUTTON, KEYBOARD	21
	1	1004602-11	BUTTON, KEYBOARD	20
	1	1004602-10	BUTTON, KEYBOARD	19
	1	1004602-9	BUTTON, KEYBOARD	18
	1	1004602-8	BUTTON, KEYBOARD	17
	1	1004602-7	BUTTON, KEYBOARD	16
	1	1004602-6	BUTTON, KEYBOARD	15
	1	1004602-5	BUTTON, KEYBOARD	14
	1	1004602-4	BUTTON, KEYBOARD	13
	1	1004602-3	BUTTON, KEYBOARD	12
	1	1004602-2	BUTTON, KEYBOARD	11
	1	1004602-1	BUTTON, KEYBOARD	10
	16	1006784-9	TERMINAL, FEED THRU	9
	1	1004597	HOLDER, COMPONENT	8
SEE NOTE 13	18	1006738	SWITCH, PUSH	7
✱	10.5	1006776-21	INSULATION, SLEEVING	6
✱	12.5	1006757-1	WIRE ELECTRICAL, .010 X .020	5
	1	1004602-18	BUTTON, KEYBOARD	4
✱	8.5	1006757-13	WIRE, ELECTRICAL, .020 DIA	3
	1	1004590	BLOCK COMPONENT	2
	1	1004784	PANEL, FRONT	1
	-011	LIST OF MATERIALS		

1003568		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ±
NEXT ASSY	USED ON	DO NOT SCALE THIS DRAWING
APPLICATION		MATERIAL
		HEAT TREATMENT
		FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN J. P. Leonard DATE 20 OCT 65
CHECKED C. B. Fagan 27 OCT 65
APPROVAL
APPROVAL
NASA APPROVAL A. C. METZGER
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

KEYBOARD MODULE
ASSEMBLY (D18)
AGC DSKY, MAIN

CODE IDENT NO. 80230
SIZE F
NASA DRAWING NO. 1003567
SCALE 1/1
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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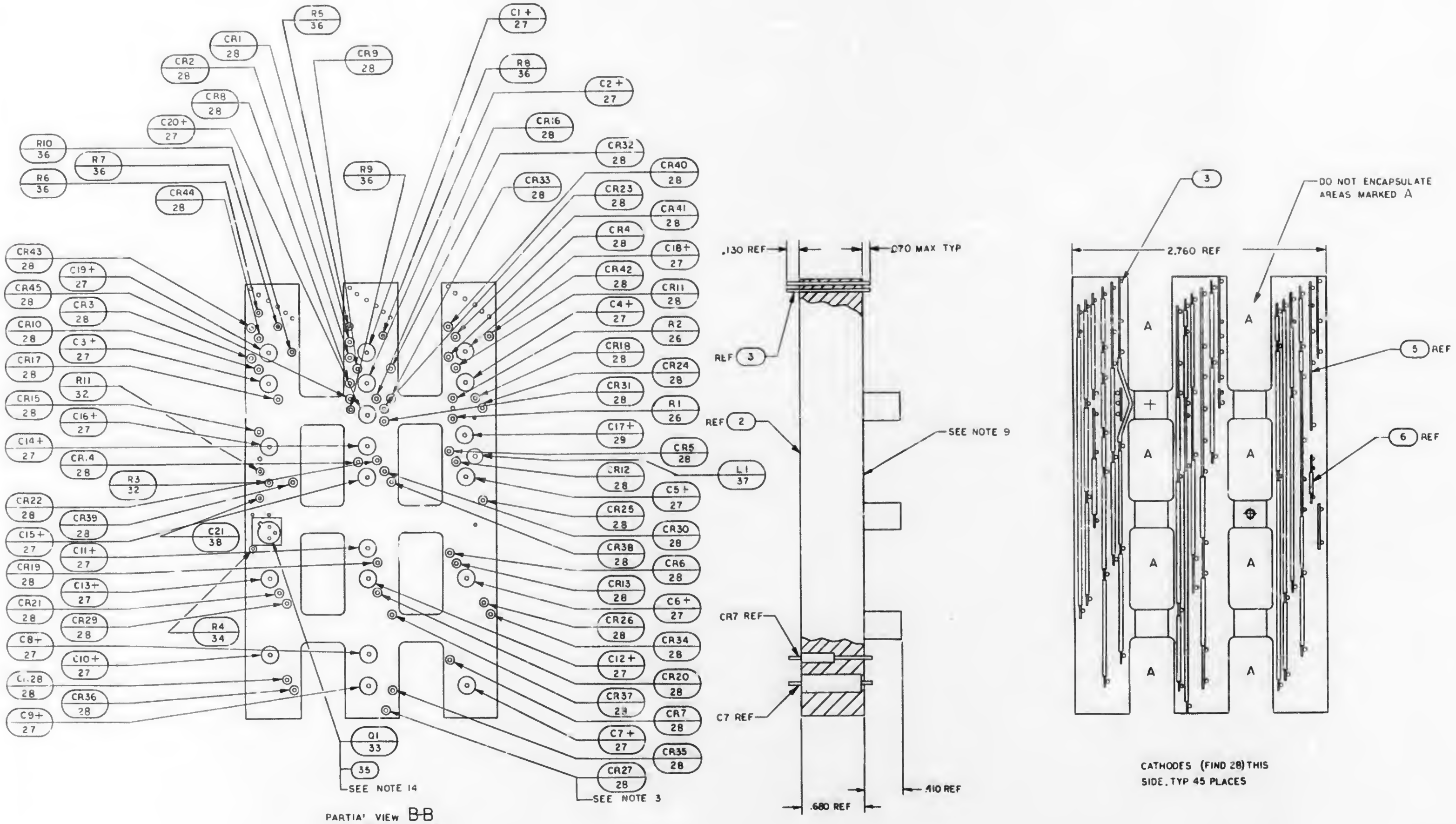

PARTIAL VIEW B-B
SHOWN BEFORE ASSEMBLY
OF FIND NO. 7 & 1

CATHODES (FIND 28) THIS
SIDE, TYP 45 PLACES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
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INSTRUMENTATION LAB
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APPROVAL
APPROVAL 7 Oct 65
NASA APPROVAL A. C. METZGER
MIT APPROVAL
MIT APPROVAL 10 Nov 65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

KEYBOARD MODULE
ASSEMBLY (D18)
AGC DSKY MAIN

CODE IDENT NO.	SIZE	NASA DRAWING NO.
80230	F	1003567
SCALE 2/1	WT	SHEET 2 OF 2

[illegible]

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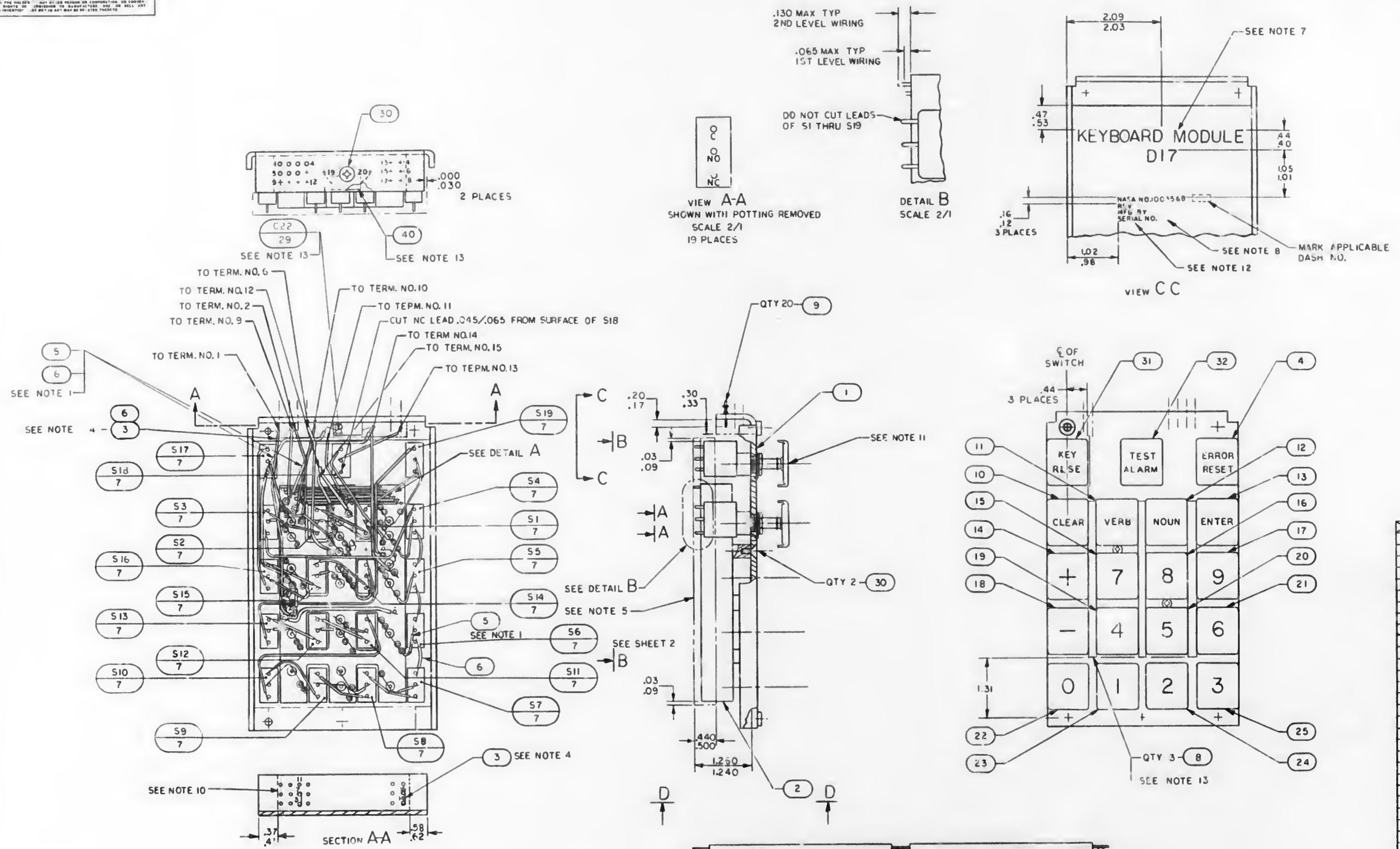
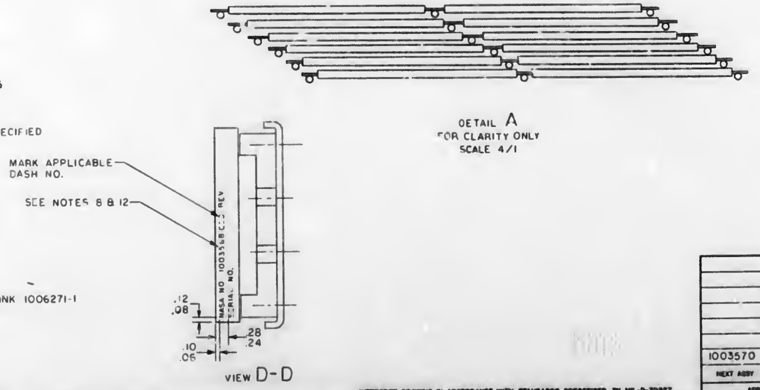
REVISIONS 239PF			
SYM	DESCRIPTION	DATE	APPROVED





NOTES:

1. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 WHEN USING FIND NO. 5
2. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
3. STAKE COMPONENTS TO FIND NO. 2 PER ND1002004
4. SOLDER ALL CONNECTIONS TO FIND NO. 9 PER ND1002071 UNLESS OTHERWISE SPECIFIED
5. ENCAPSULATE MODULE PER ND1002036 TO DIMENSIONS SHOWN
6. * DENOTES LENGTH IN FEET
7. MARK .250 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2
8. SERIALIZE PER ND1002023
9. BRUSH COAT THIS SURFACE PER ND 1002009 TO A MINIMUM HEIGHT OF .015 ABOVE COMPONENT LEADS & FEEDTHRUS
10. ENCAPSULATE THIS AREA PER NO. 1002217 PRIOR TO ENCAPSULATION PER NOTE 5
11. FIND NO. 7 SHALL MEET THE FOLLOWING ACTUATION REQUIREMENTS BEFORE AND AFTER ENCAPSULATION PER NOTE 5:
    PRETRAVEL: .093 MIN .188 MAX
    OVERTRAVEL: .060 MIN
12. MARK .093 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I USING MARKING INK 1006271-1
13. BOND FIND NO 29 TO FIND NO 40 & FIND NO 40 & FIND NO 41 TO FIND NO 1 PER ND1002004, TYPE V

☒	1005791	SCHEMATIC	REF
1	1004597	HOLDER, COMPONENT	40
1	1006777-24	CAPACITOR, FIXED CERAMIC	39
1	1010406-7	COIL, RF, CHOKE	38
6	1006750-1	RESISTOR, FIXED FILM	37
1	1004605	INSULATOR, PLATE	36
1	1006750-56	RESISTOR, FIXED FILM	35
1	1006752	TRANSISTOR, SILICON TYPE NPN	34
2	1006750-32	RESISTOR, FIXED FILM	33
1	1004602-17	BUTTON, KEYBOARD	32
1	1004602-19	BUTTON, KEYBOARD	31
3	MS51959-13	SCREW, FLAT HEAD	30
2	1006755-79	CAPACITOR, FIXED, TANTALUM	29
45	1006751	SEMI-CONDUCTOR DEVICE, DIODE	28
19	1006755-57	CAPACITOR, FIXED, TANTALUM	27
2	1006750-39	RESISTOR, FIXED FILM	26
1	1004602-16	BUTTON, KEYBOARD	25
1	1004602-15	BUTTON, KEYBOARD	24
1	1004602-14	BUTTON, KEYBOARD	23
1	1004602-13	BUTTON, KEYBOARD	22
1	1004602-12	BUTTON, KEYBOARD	21
1	1004602-11	BUTTON, KEYBOARD	20
1	1004602-10	BUTTON, KEYBOARD	19
1	1004602-9	BUTTON, KEYBOARD	18
1	1004602-8	BUTTON, KEYBOARD	17
1	1004602-7	BUTTON, KEYBOARD	16
1	1004602-6	BUTTON, KEYBOARD	15
1	1004602-5	BUTTON, KEYBOARD	14
1	1004602-4	BUTTON, KEYBOARD	13
1	1004602-3	BUTTON, KEYBOARD	12
1	1004602-2	BUTTON, KEYBOARD	11
1	1004602-1	BUTTON, KEYBOARD	10
20	1006784-9	TERMINAL, FEED THRU	9
3	1004775	PAD, RUBBER	8
19	1006738	SWITCH, PUSH	7
* 10	1006776-21	INSULATION, SLEEVING	6
* 13	1006757-1	WIRE ELECTRICAL, .010 X .020	5
1	1004602-18	BUTTON, KEYBOARD	4
* 8.5	1006757-13	WIRE, ELECTRICAL, .020 DIA	3
1	1004596	BLOCK COMPONENT	2
1	1004784	PANEL, FRONT	1
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
-011	LIST OF MATERIALS		

1003570	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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APPROVAL [illegible]
NASA APPROVAL A. C. [illegible]
MIT APPROVAL
MIT APPROVAL W Kupfer 10 [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

KEYBOARD MODULE
ASSEMBLY (D17)
AGC DSKY, NAV

CODE IDENT NO 80230
SIZE F
NASA DRAWING NO. 1003568
SCALE 1/1
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1003568

NOTICE — [illegible]

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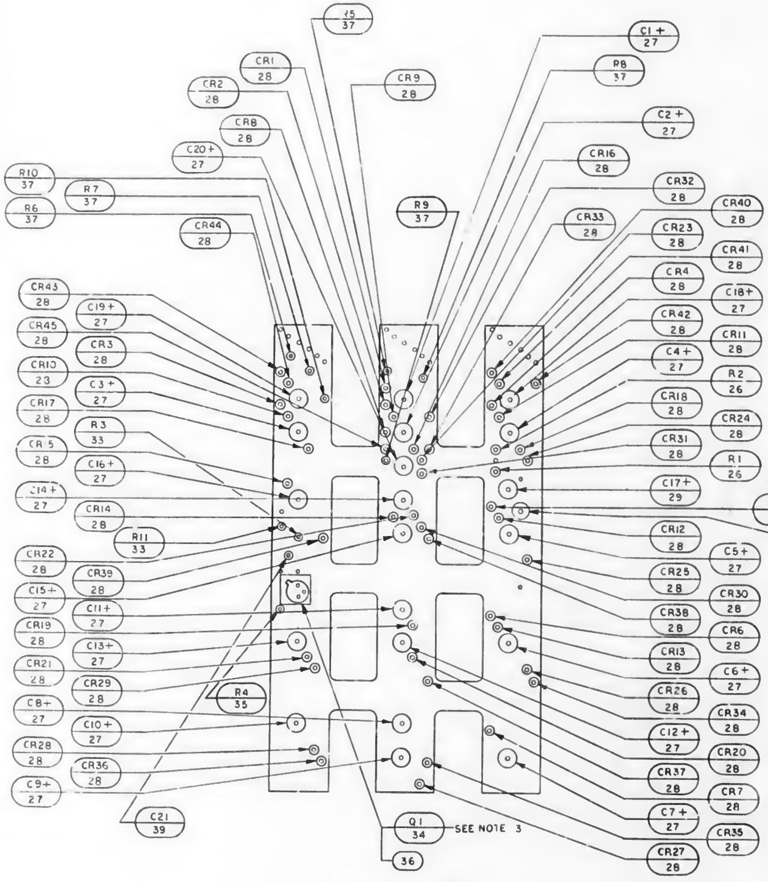
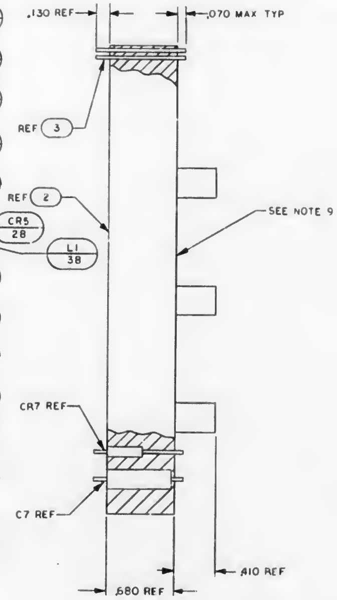
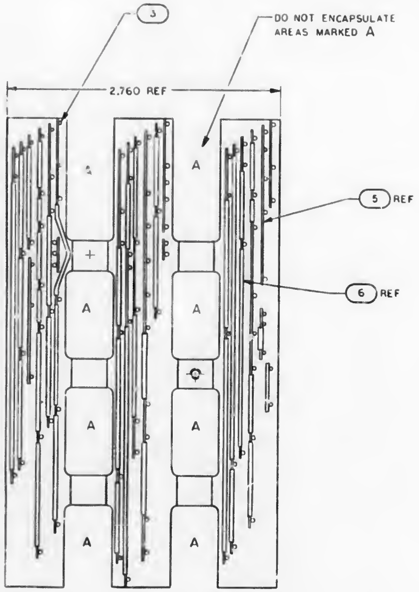


PARTIAL VIEW B-B
SHOWN BEFORE ASSEMBLY
OF FIND NO. 7 & 1





CATHODES (FIND 28) THIS
SIDE, TYP 45 PLACES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
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MIT APPROVAL

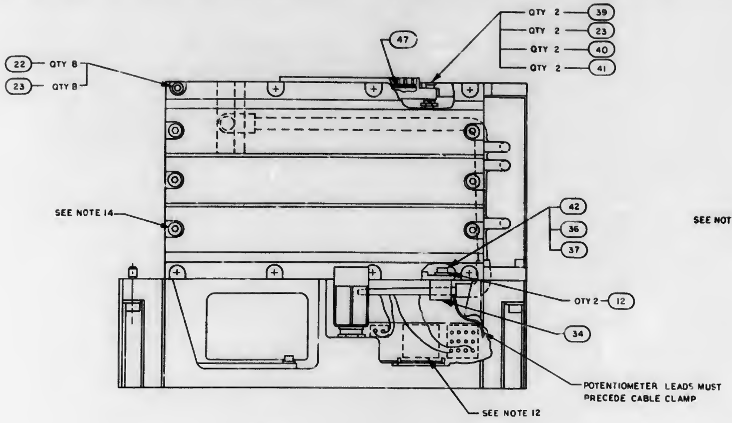
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

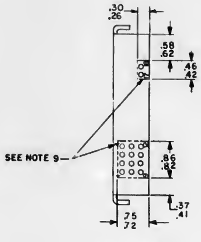
KEYBOARD MODULE
ASSEMBLY (D17)
AGC DSKY, NAV

CODE IDENT NO. 80230
SIZE F
NASA DRAWING NO. 1003568
SCALE 2/1
WT
SHEET 2 OF 2

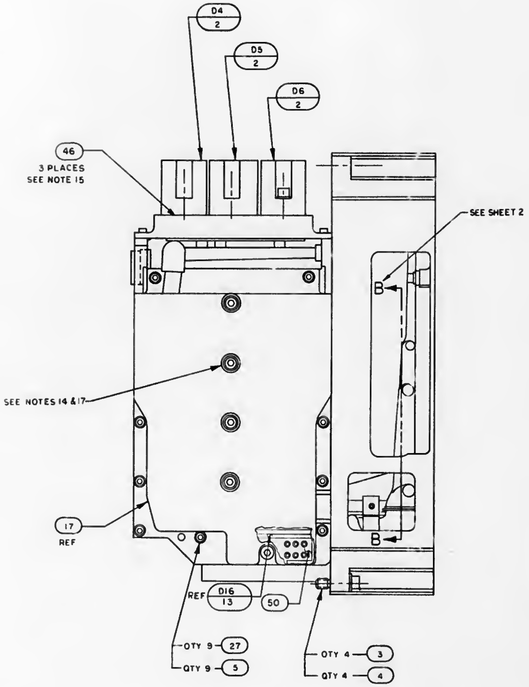
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D-70327

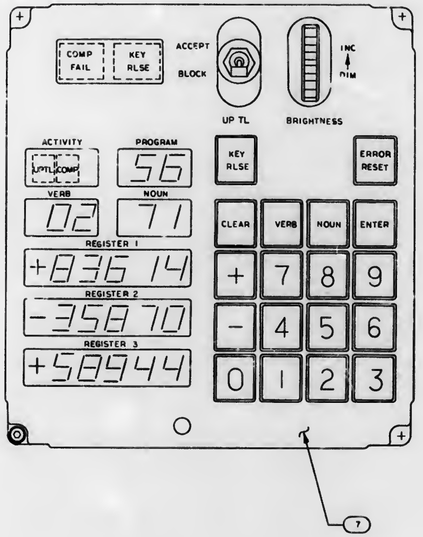
NOTICE [illegible]

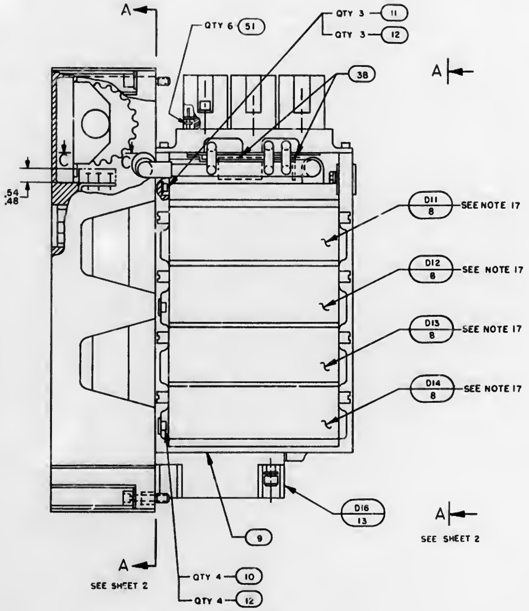




PARTIAL VIEW C-C







NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. SOLDER PER ND1002071
3. SERIALIZE PER ND1002023
4. MIL-I-631 TYPE F, FORM Ua, GRADE A, CLASS I, CATEGORY I, AWG SIZE NO. 24
5. BOND FIND NO. 28 TO FIND NO. 16 PER ND1002004
6. MARK .08/.10 HIGH WHT PER ND1002019 AND ND1002122 TYPE II CLASS I USING MARKING INK 1006271-1
7. * DENOTES LENGTH IN FEET
8. SECURE FIND NO. 33 USING MIL-S-22473, GRADE H
9. ENCAPSULATE PER ND1002217
10. MOUNTING TORQUE OF JACKING SCREWS (1004583) TO BE 3-4 IN. LBS
11. REMOVE LOCK WASHER FROM FIND NO. 19 ADJUST FIND NO. 19 TO ACHIEVE 2°-3° BACKOFF ON FIND NO. 19 BRIGHTNESS STOP
12. SECURE LEADS IN INDICATED AREA BY STAKING PER ND1002004
13. FIND NO. 35 TO BE USED FOR IDENTIFICATION OF PART NO. 1003770 AND ASSOCIATED DASH NO.
14. MOUNTING TORQUE OF JACKING SCREWS (1004579) TO BE 15-19 IN. LBS
15. APPLY FIND NO. 46 TO MODULE MOUNTING SURFACE
16. ** QTY TO BE DETERMINED AT ASSY
17. INSTALL FIND NO. 8 AND FIND NO. 44 AS SHOWN. WITH FIND NO. 43 TIGHTENED, MEASURE GAP ON EACH SIDE, BETWEEN FIND NO. 8 AND FIND NO. 9. LOOSEN FIND NO. 43 ON ONE SIDE ONLY. JACK OUT FIND NO. 8 AND INSTALL FIND NO. 45 OVER STOP PINS ON EACH SIDE OF FIND NO. 8 AS REQUIRED SO THAT THE TOTAL THICKNESS OF FIND NO. 45 IS .001/.004 GREATER THAN MEASURED GAPS. JACK IN FIND NO. 8 AND TIGHTEN FIND NO. 43
18. MARK .18/.20 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I, USING MARKING INK 1006271-1
19. MOUNTING TORQUE ON SCREWS "A" TO BE 3.5-4.5 IN LBS
20. BOND FIND NO. 53 TO FIND NO. 24 PER ND1002004, TYPE V

QTY REQD | PART OR IDENTIFYING NO.

LIST OF MATERIALS

1003770
NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL
HEAT TREATMENT
FINAL FINISH

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APPROVAL
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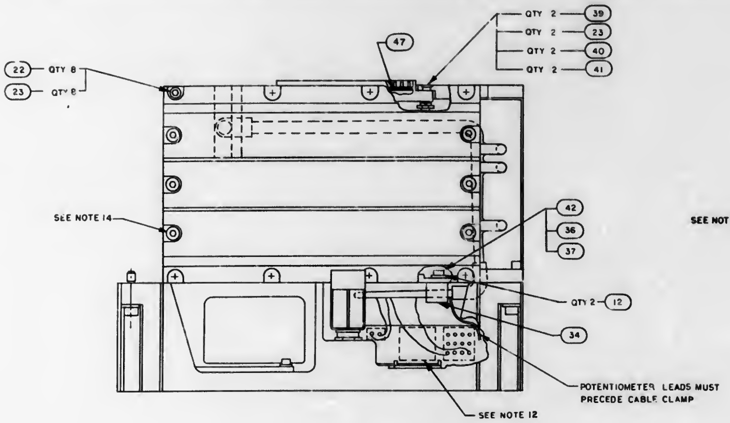
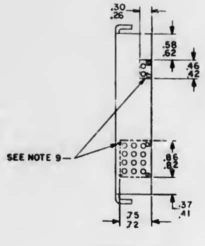
MANNED S

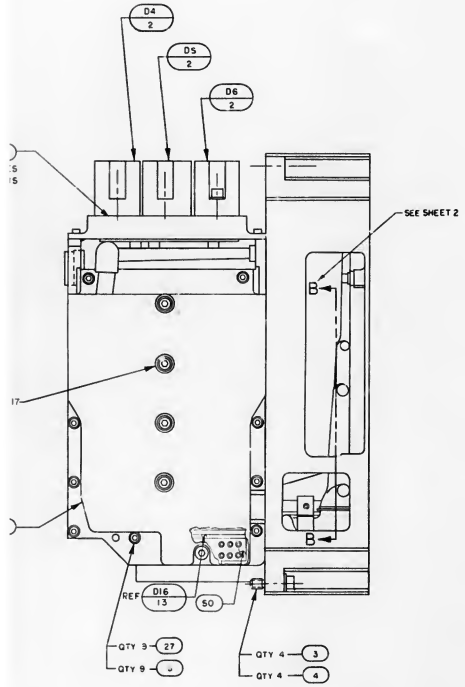
AGC KEYBO
M

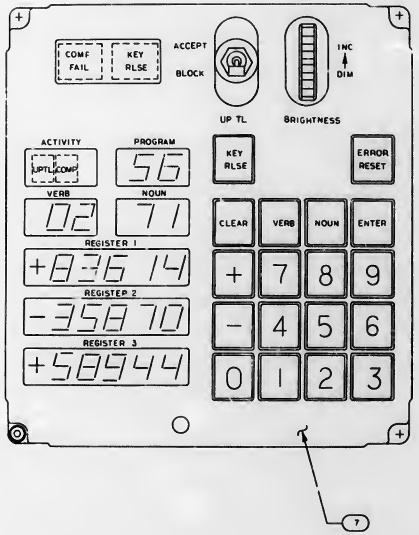
CODE IDENT NO. 80230
SIZE J
SCALE 1/1
WT

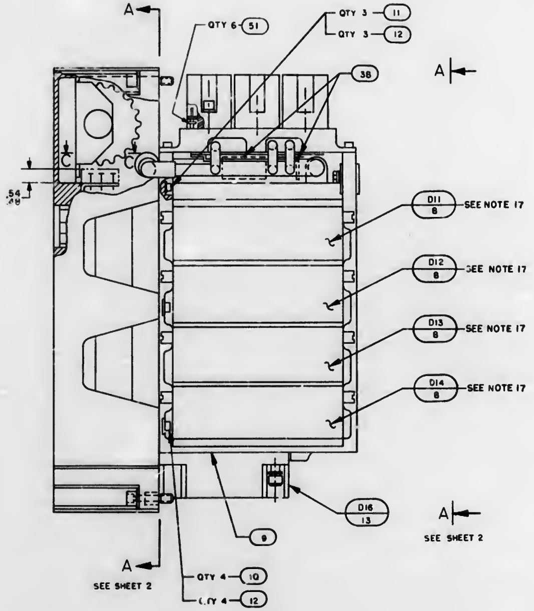




PARTIAL VIEW C-C







IET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
PER ND1002071
ZE PER ND1002023
31 TYPE F, FORM Ua, GRADE a, CLASS I, CATEGORY I, AWG SIZE NO. 24
IND NO. 28 TO FIND NO. 16 PER ND1002004
08/.10 HIGH WHT PER ND1002019 AND ND1002122 TYPE II CLASS I USING MARKING INK 1006271-1
TES LENGTH IN FEET
FIND NO. 33 USING MIL-S-22473, GRADE H
ULATE PER ND1002217
ING TORQUE OF JACKING SCREWS (1004583) TO BE 3-4 IN. LBS
LOCK WASHER FROM FIND NO. 19 ADJUST FIND NO. 19 TO ACHIEVE 2°-3° BACKOFF
D NO. 19 BRIGHTNESS STOP
E LEADS IN INDICATED AREA BY STAKING PER ND1002004
). 35 TO BE USED FOR IDENTIFICATION OF PART NO. 1003770 AND ASSOCIATED DASH NO.
NG TORQUE OF JACKING SCREWS (1004579) TO BE 15-19 IN. LBS
FIND NO. 46 TO MODULE MOUNTING SURFACE
TO BE DETERMINED AT ASSY
FIND NO. 8 AND FIND NO. 44 AS SHOWN. WITH FIND NO. 43 TIGHTENED, MEASURE GAP ON
IDE, BETWEEN FIND NO. 8 AND FIND NO. 9. LOOSEN FIND NO. 43 ON ONE SIDE ONLY.
UT FIND NO. 8 AND INSTALL FIND NO. 45 OVER STOP PINS ON EACH SIDE OF FIND NO. 8 AS REQUIRED
AT THE TOTAL THICKNESS OF FIND NO. 45 IS .001/.004 GREATER THAN MEASURED GAPS.
FIND NO. 8 AND TIGHTEN FIND NO. 43
/.20 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS I, USING MARKING INK 1006271-1
NG TORQUE ON SCREWS "A" TO BE 3.5-4.5 IN LBS
IND NO. 53 TO FIND NO. 24 PER ND1002004, TYPE V

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1003770	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

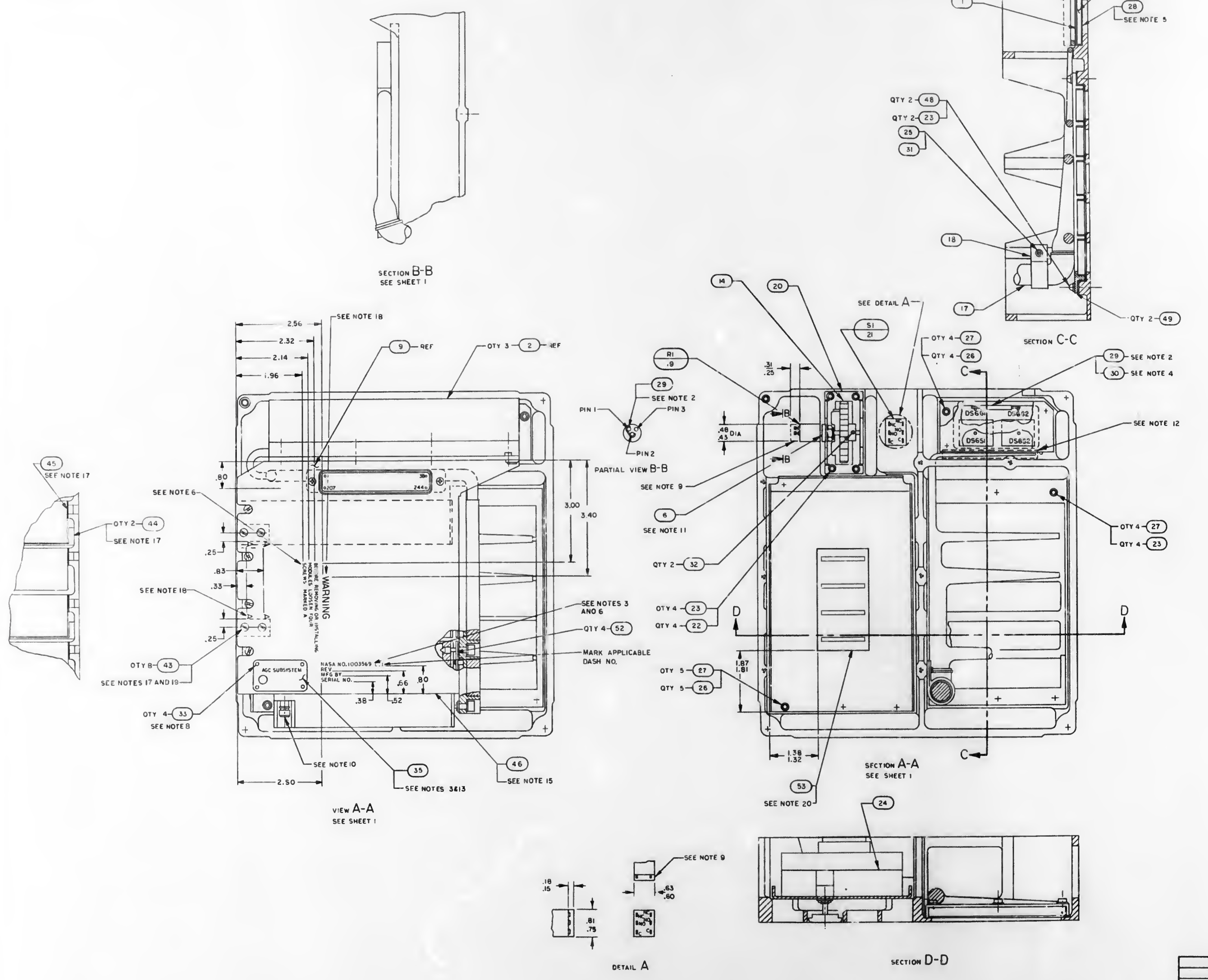
MIT
INSTRUMENTATION LAB
Cambridge, Mass.

DRAWN B. Jensen DATE
CHECKED
APPROVAL
APPROVAL Eldon C. Hall
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC KEYBOARD & DISPLAY
MAIN

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO 1003569
SCALE 1/1
WT
SHEET 1 OF 2



	1	1004779	PAD, RUBBER
	4	1004654	GASKET
	☒	1005789	MAIN DSKY O
	6	1004653	GASKET
	1	1004652	GASKET
	2	1004677	SHIM
	2	1006783 -19	SCREW, BUTTO
	1	1010812-1	GASKET
	AR	1006879	THERMOCOND
**	AR	1004665	SHIM
	2	1004666	STIFFNER
	8	MS35233-13	SCREW, PAN H
	1	MS16995-19	SCREW, SOCKE
	2	MS35337-78	WASHER, LOCK
	2	MS35200-17	SCREW, FLAT
	2	MS35649-44	NUT, PLAIN
*	1.5	1012507-003	LACING, CORD
	1	MS35649-64	NUT, PLAIN
	1	MS35338-79	WASHER, LOCK
	1	1004628	PLATE, IDEN
	1	MS25281-4	CLAMP, CABLE
	4	MS16200-1	SCREW, PAN H
	2	MS51053-213	SCREW, SET
	1	MS15795-807	WASHER, FLAT
	AR	SEE NOTE 4	SLEEVING
	AR	QQ-W-343 TYPE S	WIRE, SOLID
	1	1004849	INSULATOR, F
	22	MS16995-10	SCREW, CAP,
	9	MS15795-804	WASHER, FLA
	1	MS35216-40	SCREW, PAN
	1	1003567-011	KEYBOARD MO
	20	MS15795-803	WASHER, FLAT
	12	MS16995-9	SCREW, CAP,
	1	1006820	SWITCH, TOGG
	1	1004648	BRACKET, PO
	1	1006736	RESISTOR, VA
	1	MS25281-14	CLAMP, CABLE
	1	1003483	WIRING HAR
	1	1006814	INDICATOR, D
	1	1003543	GASKET & FRA
	1	1003473	THUMB WHEE
	1	1003532	POWER SUPP
	9	MS15795-805	WASHER, FLA
	3	MS16995-17	SCREW, SOCK
	4	MS16995-16	SCREW, SOCK
	1	1004686	HOUSING, RE
	4	1003098	RELAY MODUL
	1	1004785	HOUSING, FR
	1	1004644	WASHER, KN
	9	NAS620-4	WASHER, FLA
	4	MS15795-808	WASHER, FLA
	4	1004545	SCREW, CAP
	[illegible]	1003817-011	DECODING M
	[illegible]	1004588	INSULATOR,
	QTY REQD	PART OR IDENTIFYING NO	
	011		LIST OF MATERIALS

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ±.02 ANGLES ± DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN C. Jones DATE 21 OCT 65
CHECKED R. B. Gregory 21 OCT 65
APPROVAL
APPROVAL Eldon C Hall 29 Oct 65

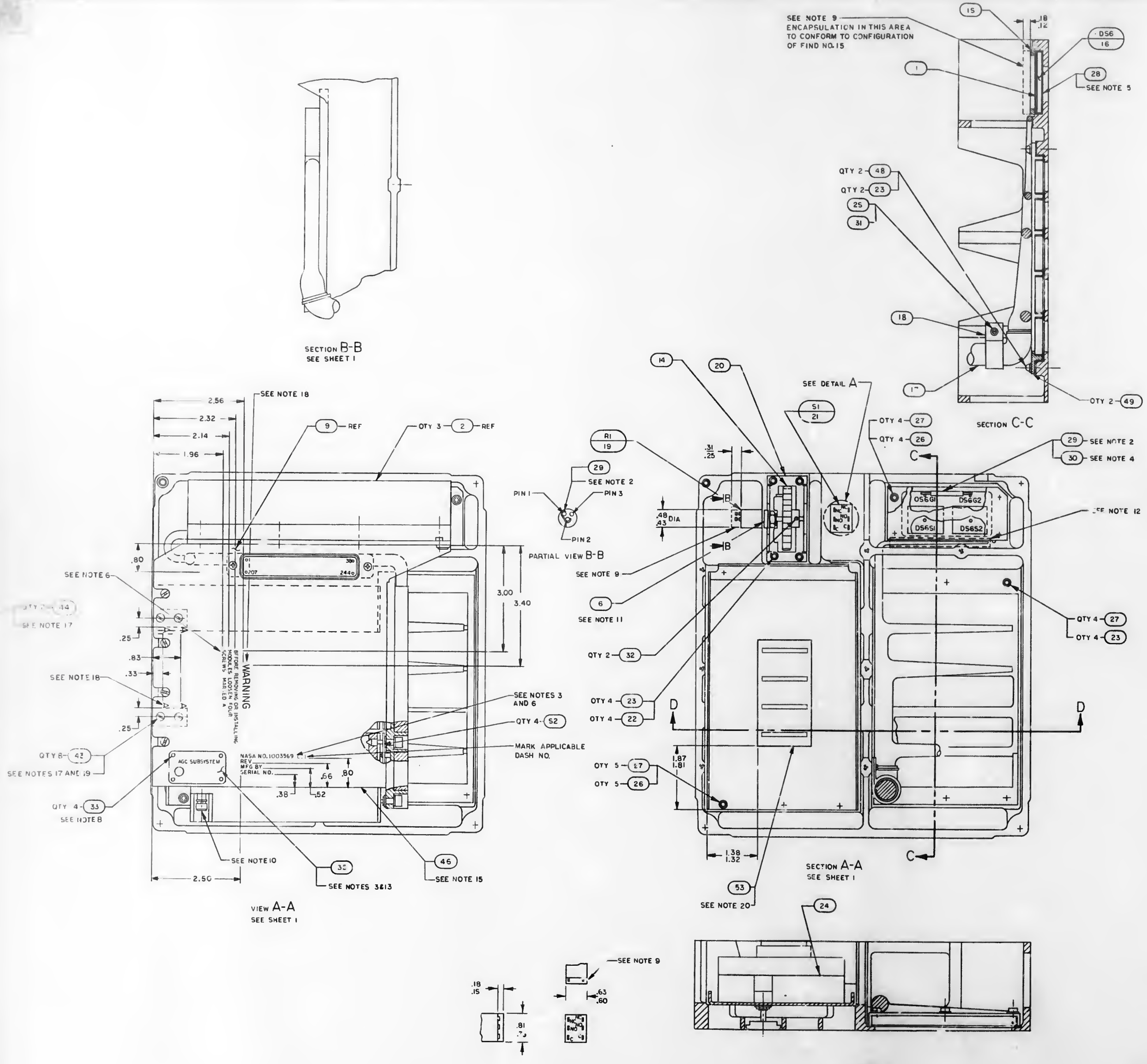
NASA APPROVAL A. C. Metzger
MIT APPROVAL
MIT APPROVAL

MANNED S

AGC KEYBO
M

CODE IDENT NO 80230
SIZE J
SCALE 1 / 1
WT

REVISIONS 23988			
SYM	DESCRIPTION	DATE	APPROVAL



DETAIL A

SECTION D-D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
1	1004779	PAD, RUBBER	53
4	1004654	GASKET	52
X	1005789	MAIN DSKY OUTLINE	REF
6	1004653	GASKET	51
1	1004652	GASKET	50
2	1004677	SHIM	49
2	1006783-19	SCREW, BUTTON HEAD, HEX SOCKET	48
1	1010812-1	GASKET	47
AR	1006879	THERMOCONDUCTIVE COMPOUND	46
** AR	1004665	SHIM	45
2	1004666	STIFFNER	44
8	MS35233-13	SCREW, PAN HEAD	43
1	MS16995-19	SCREW, SOCKET HEAD	42
2	MS35337-78	WASHER, LOCK	41
2	MS35200-17	SCREW, FLAT HEAD	40
2	MS35649-44	NUT, PLAIN	39
* 1.5	1012507-003	LACING, CORD	38
1	MS35649-64	NUT, PLAIN	37
1	MS35338-79	WASHER, LOCK	36
1	1004628	PLATE, IDENT	35
1	MS25281-4	CLAMP, CABLE	34
4	MS16200-1	SCREW, PAN HEAD	33
2	MS51053-213	SCREW, SET	32
1	MS15795-807	WASHER, FLAT	31
AR	SEE NOTE 4	SLEEVING	30
AR	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	29
1	1004649	INSULATOR, FRONT	28
22	MS16995-10	SCREW, CAP, SOCKET HEAD	27
9	MS15795-304	WASHER, FLAT	26
1	MS35216-40	SCREW, PAN HEAD	25
1	1003567-011	KEYBOARD MODULE, D18	24
20	MS15795-803	WASHER, FLAT	23
12	MS16995-9	SCREW, CAP, SOCKET HEAD	22
1	1006820	SWITCH, TOGGLE	21
1	1004648	BRACKET, POT	20
1	1006736	RESISTOR, VARIABLE	19
1	MS25281-14	CLAMP, CABLE	18
1	1003483	WIRING HARNESS	17
1	1006814	INDICATOR, DIGITAL DISPLAY	16
1	1003543	GASKET & FRAME ASSY	15
1	1003473	THUMB WHEEL ASSY	14
1	1003532	POWER SUPPLY ASSY	13
9	MS15795-805	WASHER, FLAT	12
3	MS16995-17	SCREW, SOCKET HEAD	11
4	MS16995-16	SCREW, SOCKET HEAD	10
1	1004686	HOUSING, RELAY MODULE	9
4	1003098	RELAY MODULE ASSY	8
1	1004785	HOUSING, FRONT PANEL	7
1	1004644	WASHER, KNURLED	6
9	NAS620-4	WASHER, FLAT	5
4	MS15795-808	WASHER, FLAT	4
4	1004545	SCREW, CAPTIVE	3
3	1003817-011	DECODING MODULE ASSY	2
1	1004588	INSULATOR, INDICATOR DISPLAY	1
011	LIST OF MATERIALS		

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
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MATERIAL
HEAT TREATMENT
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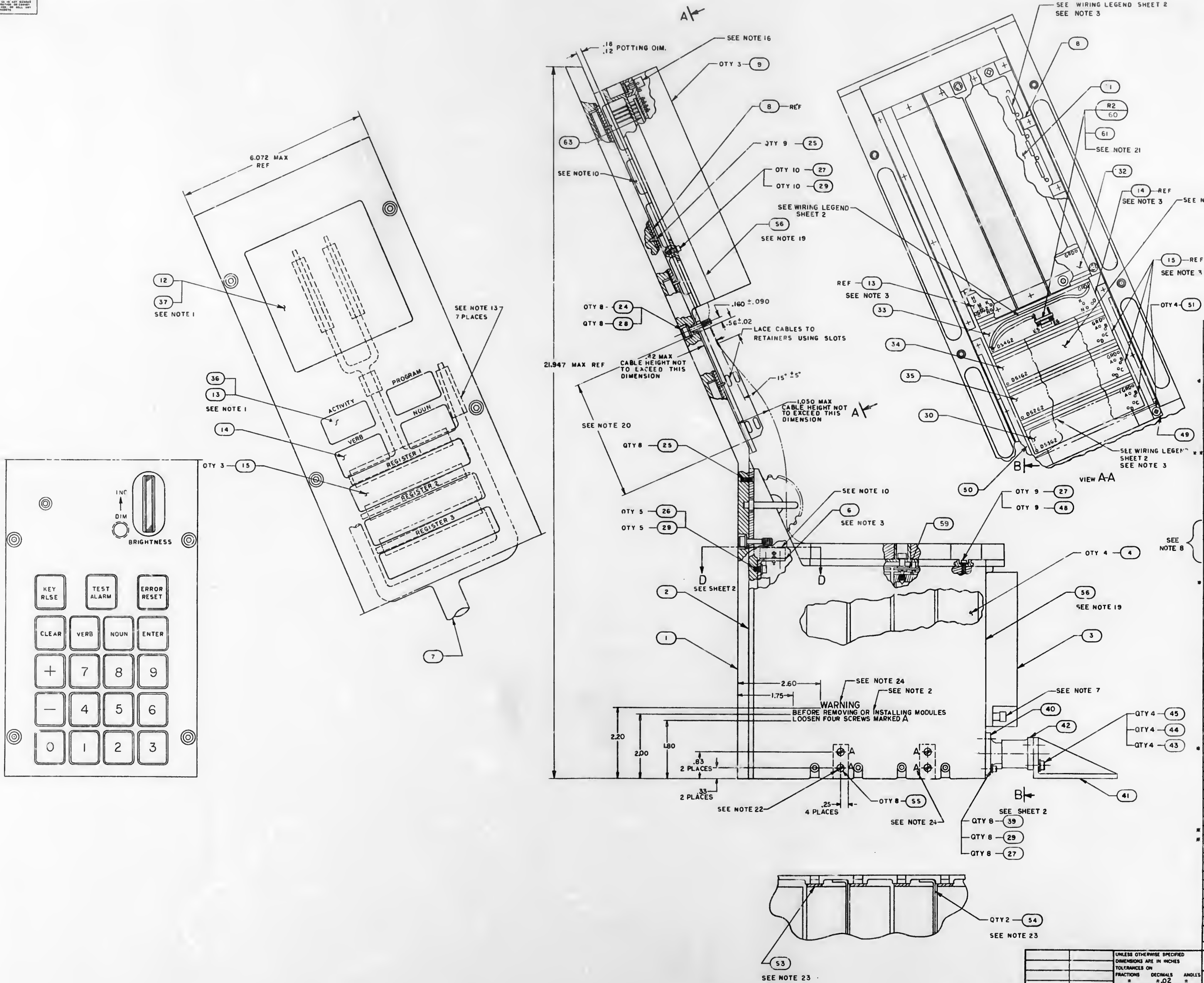
CAMBRIDGE, MASS.
DRAWN DATE
CHECKED
APPROVAL
APPROVAL Eldon C Hall
NASA APPROVAL A. C. METZGER
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC KEYBOARD & DISPLAY MAIN

CODE IDENT NO.	SIZE	NASA DRAWING NO
80230	J	1003569
SCALE 1/1	WT	SHEET 2 OF 2

NOTICE – [illegible]



	QTY REQD	PART OR IDENTIFYING NO	NOM
	☒	1006197	INTERCONNECT
	☒	1005788	AGC DSKY NAV
	1	1004652	GASKET
	6	1004653	GASKET
*	.70	1010416-20	WIRE, ELECTRI
	1	1004823-011	HOLDER, COMP
	1	1006750-72	RESISTOR
	4	1004654	GASKET
	1	1010812-3	GASKET
	2	MS24693-PC2	SCREW, FLAT H
	AR	1006879	THERMOCONDU
	8	MS35233-13	SCREW, PAN H
	2	1004666-011	STIFFENER
* *	AR	1004665	SHIM
	1	1004644	WASHER, KNU
	4	MS35200-15	SCREW, FLAT H
	1	1004636	RETAINER, HOL
	1	1004635	RETAINER, HOL
	9	NAS 620-4	WASHER, FLA
	4	MS16200-1	SCREW, PAN H
	1	1004628	PLATE, IDENT
SEE NOTE 8	4	MS35337-80	WASHER, LOC
	4	MS15795-807	WASHER, FLA
	4	MS16995-26	SCREW, SOCK
	1	1004659-011	FLANGE
	1	1004670	BRACKET, AN
	1	1003487-011	ALIGNMENT P
	8	MS35337-78	WASHER, LOC
*	1.0	1012507-003	CORD, LACING
	1	100491	PHOTO MA FR
	1	1004590	PHOTO MA FR
	1	1004128	PHOTO MA RE
	1	1004126	PHOTO MA RE
	1	1004148	PHOTO MASTE
	1	1004147	PHOTO MASTE
	1	1004149	PHOTO MASTE
	1	1004129	PHOTO MA REG
	27	MS15795-803	WASHER, FLAT
	8	MS15795-808	WASHER, FLAT
	27	MS16995-10	SCREW, SOCKE
	9	MS16995-9	SCREW, SOCKE
	17	MS35200-13	SCREW, FLAT H
	8	1004545	SCREW, CAPTIV
	2	MS51053-213	SCREW, SET
	2	MS16633-4012	RING, RETAINI
	2	1004119	CONNECTOR, S
*	3.0	1006737-A2	WIRE, ELECTRI
	1	1003473	THUMB WHEE
	1	1006736	RESISTOR, VA
	1	1004648	BRACKET
	REF	1006167	INTERCONNECT
	3	1006813	INDICATOR, DI
	1	1006817	INDICATOR, DI
	1	1006818	INDICATOR, DI
	1	1006819	INDICATOR, DI
*	.25	SEE NOTE 6	SLEEVING
*	.50	QQ-W-343 TYPE S	WIRE, SOLID
	3	1003817-011	DECODING MO
	1	1003534	E/L HOLD DO
	1	1003550	WIRING HARN
	1	1003568-011	KEYBOARD MC
	1	1004668	BRACKET, CAB
	4	1003098	RELAY MODU
	1	1003532	POWER SUPPL
	1	1004683	HOUSING, REL
	1	1004786	PANEL, FRONT

011 LIST OF MATERIALS

1003770	
NEXT ASSY	USED ON
APPLICATION	

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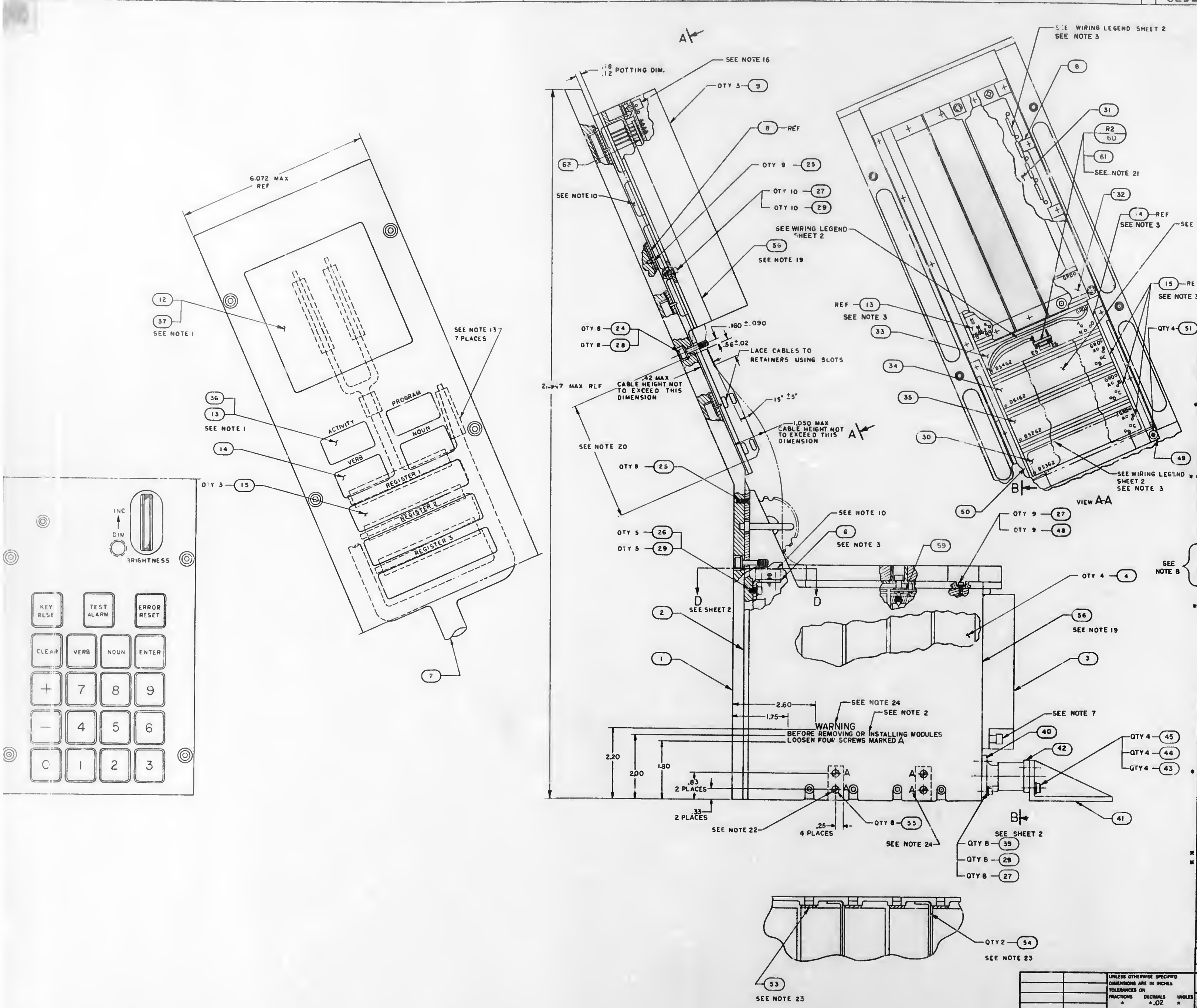
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN D.A. Clement DATE 21 Oct 65
CHECKED
APPROVAL
APPROVAL Eldon C. Hall 21 Oct 65
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED S
HO
AGC NAV

CODE IDENT NO 80230
SIZE J
SCALE 1/1
WT

REVISIONS 23977

SYM	DESCRIPTION	DATE	APPROVAL



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1006197	INTERCONNECTING DIAGRAM	REF
☒	1005788	AGC DSKY NAV PANEL OUTLINE	REF
1	1004652	GASKET	64
6	1004653	GASKET	63
* .70	1010416-20	WIRE, ELECTRICAL, STRD, AWG 26	62
1	1004823-011	HOLDER, COMPONENT	61
1	1006750-72	RESISTOR	60
4	1004654	GASKET	59
1	1010812-3	GASKET	58
2	MS24693-PC2	SCREW, FLAT HEAD	57
AR	1006879	THERMOCONDUCTIVE COMPOUND	56
8	MS35233-13	SCREW, PAN HEAD	55
2	1004666-011	STIFFENER	54
** AR	1004665	SHIM	53
1	1004644	WASHER, KNURLED	52
4	MS35200-15	SCREW, FLAT HEAD	51
1	1004636	RETAINER, HOLD DOWN LH	50
1	1004635	RETAINER, HOLD DOWN RH	49
9	NAS 620-4	WASHER, FLAT	48
4	MS16200-1	SCREW, PAN HEAD	47
1	1004628	PLATE, IDENT	46
4	MS35337-80	WASHER, LOCK	45
4	MS15795-807	WASHER, FLAT	44
4	MS16995-26	SCREW, SOCKET HEAD	43
1	1004669-011	FLANGE	42
1	1004670	BRACKET, ANGLE	41
1	1003487-011	ALIGNMENT PIN ASSY	40
8	MS35337-78	WASHER, LOCK	39
* 1.0	1012507-003	CORD, LACING	38
1	100491	PHOTO MA FRONT, INDICATOR DISPLAY	37
1	1004590	PHOTO MA FRONT, PROGRAM DISPLAY	36
1	1004128	PHOTO MA REGISTER NO.2 DISPLAY	35
1	1004126	PHOTO MA REGISTER NO.1 DISPLAY	34
1	1004148	PHOTO MASTER VERB-NOUN DISPLAY	33
1	1004147	PHOTO MASTER PROGRAM DISPLAY	32
1	1004149	PHOTO MASTER INDICATOR DISPLAY	31
1	1004129	PHOTO MA REGISTER NO.3 DISPLAY	30
27	MS15795-803	WASHER, FLAT	29
8	MS15795-808	WASHER, FLAT	28
27	MS16995-10	SCREW, SOCKET HD	27
9	MS16995-9	SCREW, SOCKET HD	26
17	MS35200-13	SCREW, FLAT HD	25
8	1004545	SCREW, CAPTIVE	24
2	MS51053-213	SCREW, SET	23
2	MS16633-4012	RING, RETAINING	22
2	1004119	CONNECTOR, STUD	21
* 3.0	1006737-A2	WIRE, ELECTRICAL	20
1	1003473	THUMB WHEEL ASSY	19
1	1006736	RESISTOR, VAR	18
1	1004648	BRACKET	17
REF	1006167	INTERCONNECTING DIAGRAM	16
3	1006813	INDICATOR, DIGITAL DISPLAY	15
1	1006817	INDICATOR, DIGITAL DISPLAY	14
1	1006818	INDICATOR, DIGITAL DISPLAY	13
1	1006819	INDICATOR, DIGITAL DISPLAY	12
* .25	SEE NOTE 6	SLEEVING	11
* .50	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	10
3	1003817-011	DECODING MODULE ASSY	9
1	1003534	E/L HOLD DOWN ASSY	8
1	1003550	WIRING HARNESS	7
1	1003568-011	KEYBOARD MODULE ASSY	6
1	1004668	BRACKET, CABLE SUPPORT	5
4	1003098	RELAY MODULE ASSY	4
1	1003532	POWER SUPPLY ASSY	3
1	1004683	HOUSING, RELAY MODULE	2
1	1004786	PANEL, FRONT	1
011	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003770	
APPLICATION	

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
FRACTIONS ± DECIMALS ±.02 ANGLES ±
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MATERIAL
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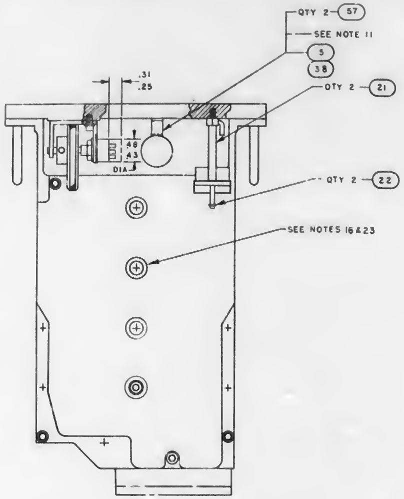
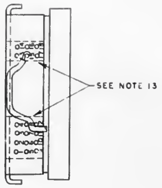
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN A.C. Clermont DATE 20 Oct 65
CHECKED Alonge 26 Oct 65
APPROVAL
APPROVAL Eldon C Hall 29 Oct 65
NASA APPROVAL A. C. METZGER
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC NAV DSKY ASSY

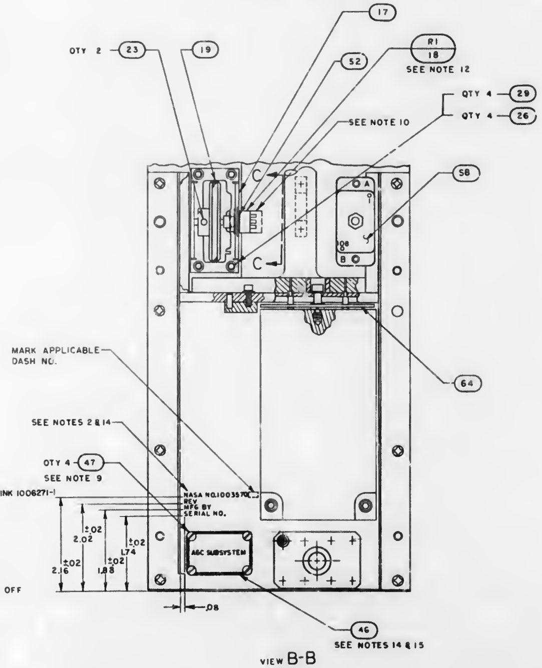
CODE IDENT NO. 80230 SIZE J NASA DRAWING NO. 1003570
SCALE 1/1 WT SHEET 1 OF 2



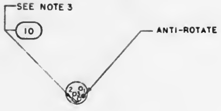


VIEW DD

WIRING LEGEND				
FROM	COLOR	AWG	FIND NO	TO
DS1A1	WHT	30	20	DS1C1
DS2A1	↑	↑	↑	DS2C1
DS3A1				DS3C1
DS4G1				DS4G2
DS3G1				DS3G2
DS5G1				DS5G2
DS2G1	↓	↓	↓	DS2G2
DS1G1	WHT	30	20	DS1G2
DS6G1	BUS & SLV	26	10 & 11	DS6G2
DS6G2	↑	↑	↑	DS6G3
DS6G3	↓	↓	↓	DS6G4
DS6G4	BUS & SLV	26	10 & 11	DS6G5
DS4G2	WHT	26	62	DS4E5



VIEW B-B



VIEW CC

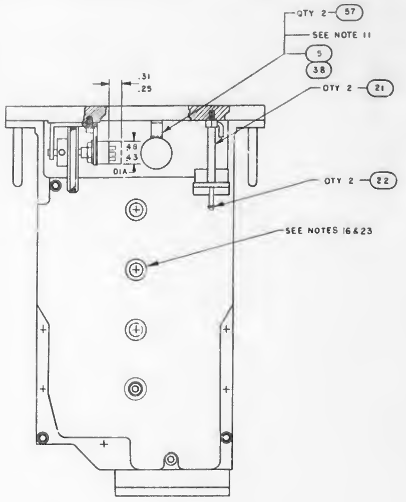
NOTES

1. BOND FIND NO. 37 TO FIND NO. 12, FIND NO. 36 TO FIND NO. 13 PER ND 002004
2. MARK .08/.10 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
3. SOLDER PER ND1002071
4. WIRE PER ND1002032
5. AR DENOTES AS REQUIRED
6. MIL-I-631 TYPE F, FORM UA, GRADE A, CLASS 1, CATEGORY 1, AWG SIZE NO. 24
7. * DENOTES LENGTH IN FEET
8. FIND NO. 41 THRU 45 ARE TO BE SUPPLIED & IDENTIFIED PER ND 1002019
9. SECURE FIND NO. 47 USING MIL-S 22473, GRADE H
10. ENCAPSULATE PER ND1002217
11. [illegible]ACE FIND NO.7 TO FIND NO.5 USING FIND NO.38
12. REMOVE LOCK WASHER FROM FIND NO.18. ADJUST FIND NO.18 TO ACHIEVE 2°-3° BACK OFF ON FIND NO.18 BRIGHTNESS STOP
13. SECURE HARNESS IN INDICATED AREAS BY STAKING PER ND.1002004
14. SERIALIZE PER ND1002023
15. FIND NO. 46 TO BE USED FOR IDENTIFICATION OF PART NO 1003770 AND ASSOCIATED DASH NO.
16. MOUNTING TORQUE FOR JACKING SCREWS (1004579) TO BE 15-19 IN. LBS
17. MOUNTING TORQUE FOR JACKING SCREWS (1004583) TO BE 3-4 IN. LBS
18. ** QTY TO BE DETERMINED AT ASSEMBLY
19. APPLY FIND NO 56 TO MODULE MOUNTING SURFACES
20. POTTING IN THIS AREA TO CONFORM TO CONFIGURATION OF FIND NO. 50
21. BOND FIND NO. 59 TO FIND NO. 60 & FIND NO. 60 TO DS4 PER ND1002004
22. MOUNTING TORQUE ON SCREWS MARKED "A" TO BE 3.5 TO 4.5 IN-LBS
23. INSTALL FIND NO. 4 & FIND NO. 54 AS SHOWN WITH FIND NO. 55 TIGHTENED, MEASURE GAP ON EACH SIDE, BETWEEN FIND NO. 4 AND 2 LOOSEN FIND NO. 55 ON ONE SIDE ONLY. JACK OUT FIND NO. 4 AND INSTALL FIND NO. 53 OVER STOP PINS ON EACH SIDE OF FIND NO. 4 AS REQUIRED SO THAT THE TOTAL THICKNESS OF FIND NO. 53 IS .001/.004 GREATER THAN MEASURED GAP. JACK IN FIND NO. 4 AND TIGHTEN FIND NO. 55
24. MARK .18/.20 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
25. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

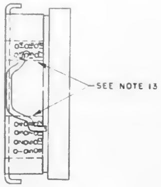
REFERENCES
1. 1020105 NAV DSKY TO HANDLING FIXTURE

QTY REQD	PART OR IDENTIFYING NO
	LIST OF MATERIALS

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± .03 ANGLES ± DO NOT SCALE THIS DRAWING	M I T INSTRUMENTATION LAB CAMBRIDGE, MASS	MANNED
APPLICATION		MATERIAL	DRAWN Dick Clement DATE 28 Oct 65 CHECKED C. Logan 26 Oct 65 APPROVAL APPROVAL Edw. C. Hall 29 Oct 65	AGC NAV
		HEAT TREATMENT	NASA APPROVAL A. C. METZGER	CODE IDENT NO 80230 SIZE J
		FINAL FINISH	MIT APPROVAL	SCALE 1/1 WT



WIRING LEGEND				
FROM	COLOR	AWG	FIND NO.	TO
DS1A1	WHT	30	20	DS1C1
DS2A1				DS2C1
DS3A1				DS3C1
DS4G1				DS4G2
DS3G1				DS3G2
DS5G1				DS5G2
DS2G1				DS2G2
DS1G1	WHT	30	20	DS1G2
DS6G1	BUS & SLV	26	10 & 11	DS6G2
DS6G2				DS6G3
DS6G3				DS6G4
DS6G4	BUS & SLV	26	10 & 11	DS6G5
DS4C2	WHT	26	62	DS4E5



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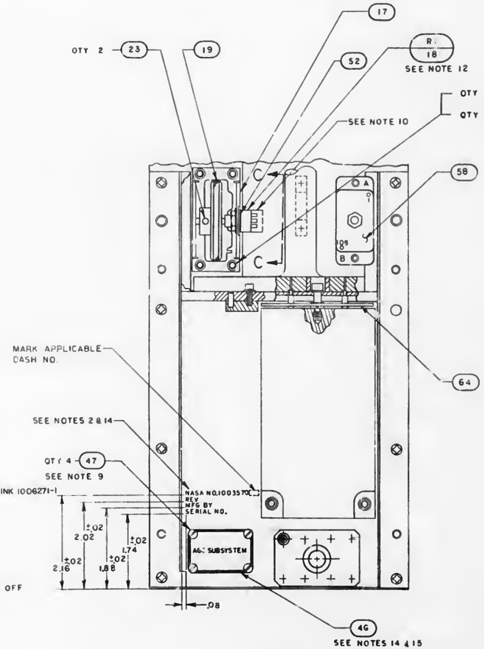
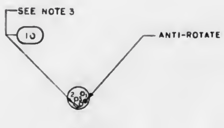


VIEW B-B



VIEW CC

NO. 37 TO FIND NO. 12, FIND NO. 36 TO FIND NO. 13 PER ND1002004
WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING MARKING INK 1006271-1
1002271
8032
AS REQUIRED
FORM UA, GRADE A, CLASS I, CATEGORY I, AWG SIZE NO. 24
GTH IN FEET
THRU 45 ARE TO BE SUPPLIED
PER ND1002019
MIL-S 22473, GRADE H
PER ND1002217
TO FIND NO.5 USING FIND NO.38
FROM FIND NO.18. ADJUST FIND NO.18 TO ACHIEVE 2°-3° BACK OFF
BRIGHTNESS STOP
INDICATED AREAS BY STAKING PER NO.1002004
ND1002023
USED FOR IDENTIFICATION OF PART NO.1003770 AND
NO.
FOR JACKING SCREWS (1004579) TO BE 15-19 IN.LBS
FOR JACKING SCREWS (1004583) TO BE 3-4 IN.LBS
TERMINED AT ASSEMBLY
50 TO MODULE MOUNTING SURFACES
AREA TO CONFORM TO CONFIGURATION OF FIND NO. 50
FIND NO. 60 & FIND NO. 60 TO DS4 PER ND1002004
SCREWS MARKED "A" TO BE 3.5 TO 4.5 IN-LBS
4 AS SHOWN WITH FIND NO. 55 TIGHTENED,
E, BETWEEN FIND NO. 4 AND 2 LOOSEN FIND NO. 55
FIND NO. 4 AND INSTALL FIND NO. 53 OVER STOP PINS
4 AS REQUIRED SO THAT THE TOTAL THICKNESS OF FIND
THAN MEASURED GAP. JACK IN FIND NO. 4 AND TIGHTEN

ND1002019 AND ND1002122 TYPE II CLASS 2, USING

WITH STANDARDS PRESCRIBED BY MIL-D-70327

REFERENCES
1. 1020105 NAV DSKY TO HANDLING FIXTURE

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

2398P

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

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DRAWN D.O. Pennant DATE 29 Jul 65
CHECKED Coge 26 Jul 65
APPROVAL
APPROVAL Edw C Hall 29 Jul 65
NASA APPROVAL A. C. METZGER
MIT APPROVAL W Kupfer 10 Nov 65

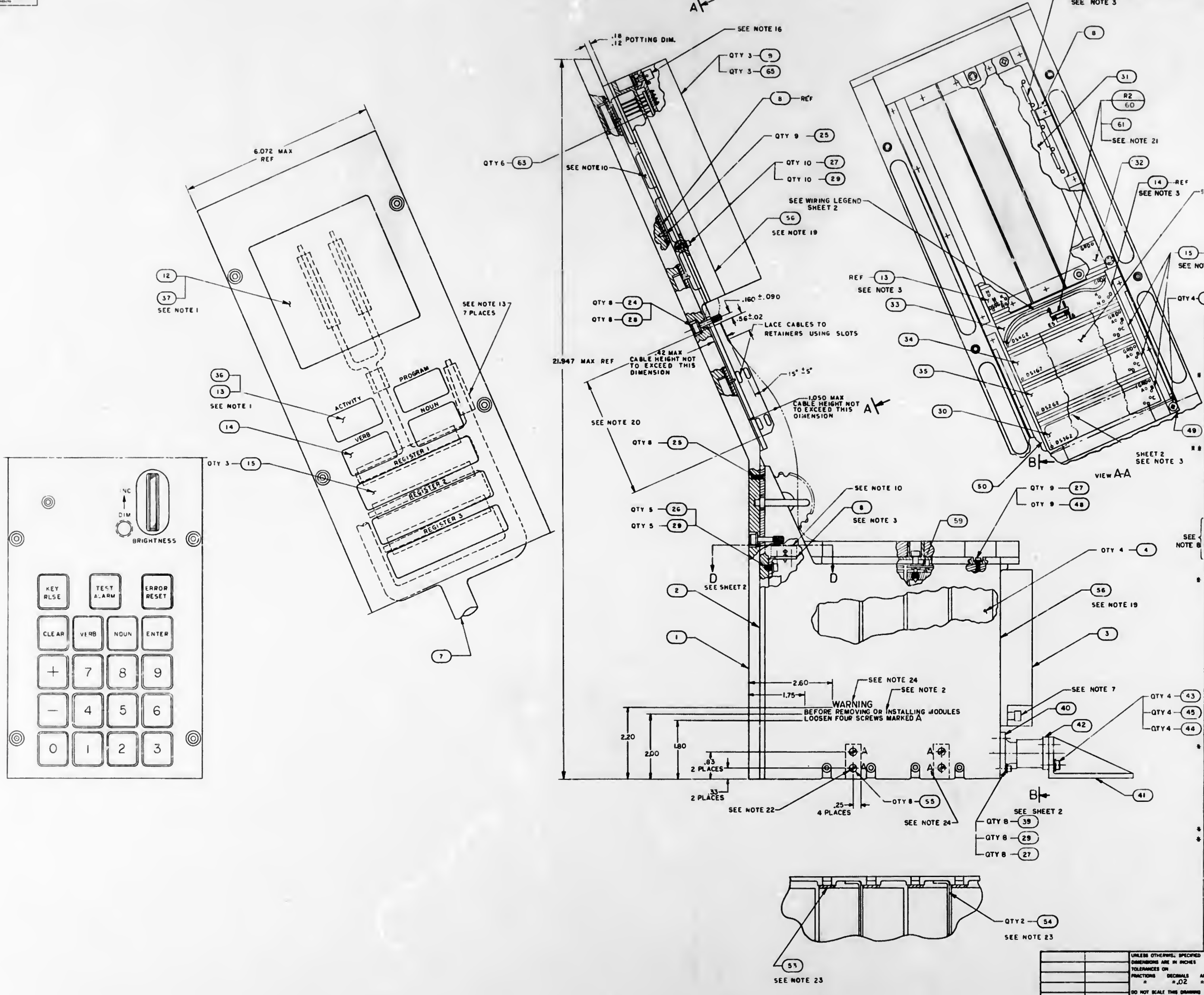
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AGC NAV DSKY ASSY

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO 1003570
SCALE 1/1
WT
SHEET 2 OF 2

[illegible]

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 24839 DH CHK		



	QTY REQD	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	X	X	1006197	INTERCONNECTING DIAGRAM	REF
	X	X	1005788	AGC DSKY NAV PANEL OUTLINE	REF
	3	X	1003530-000	DECODING MODULE ASSY	65
	1	1	1004652	GASKET	64
	6	X	1004653	GASKET	63
*	.70	.70	1010416-20	WIRE, ELECTRICAL, STRD, AWG 26	62
	1	1	1004823-011	HOLDER, COMPONENT	61
	1	1	1006750-72	RESISTOR	60
	4	4	1004654	GASKET	59
	1	1	1010812-3	GASKET	58
	2	2	MS24693-PC2	SCREW, FLAT HEAD	57
	AR	AR	1006879	THERMOCONDUCTIVE COMPOUND	56
	8	8	MS35233-13	SCREW, PAN HEAD	55
	2	2	1004666-011	STIFFENER	54
**	AR	AR	1004665	SHIM	53
	1	1	1004644	WASHER, KNURLED	52
	4	4	MS35200-15	SCREW, FLAT HEAD	51
	1	1	1004636	RETAINER, HOLD DOWN LH	50
	1	1	1004635	RETAINER, HOLD DOWN RH	49
	9	9	NAS 620-4	WASHER, FLAT	48
	4	4	MS16200-1	SCREW, PAN HEAD	47
	1	1	1004628	PLATE, IDENT	46
SEE NOTE 8	4	4	MS35337-80	WASHER, LOCK	45
	4	4	MS15795-807	WASHER, FLAT	44
	4	4	MS18995-26	SCREW, SOCKET HEAD	43
	1	1	1004669-011	FLANGE	42
	1	1	1004670	BRACKET, ANGLE	41
	1	1	1003487-011	ALIGNMENT PIN ASSY	40
	8	8	MS35337-78	WASHER, LOCK	39
*	1.0	1.0	1012507-003	CORD, LACING	38
	1	1	100491	PHOTO MA FRONT, INDICATOR DISPLAY	37
	1	1	1004590	PHOTO MA FRONT, PROGRAM DISPLAY	36
	1	1	1004128	PHOTO MA REGISTER NO.2 DISPLAY	35
	1	1	1004126	PHOTO MA REGISTER NO.1 DISPLAY	34
	1	1	1004148	PHOTO MASTER VERB-NOUN DISPLAY	33
	1	1	1004147	PHOTO MASTER PROGRAM DISPLAY	32
	1	1	1004149	PHOTO MASTER INDICATOR DISPLAY	31
	1	1	1004129	PHOTO MA REGISTER NO.3 DISPLAY	30
	27	27	MS15795-803	WASHER, FLAT	29
	8	8	MS15795-808	WASHER, FLAT	28
	27	27	MS16995-10	SCREW, SOCKET HD	27
	9	9	MS16995-9	SCREW, SOCKET HD	26
	17	17	MS35200-13	SCREW, FLAT HD	25
	8	8	1004545	SCREW, CAPTIVE	24
	2	2	MS51053-213	SCREW, SET	23
	2	2	MS16633-4012	RING, RETAINING	22
	2	2	1004119	CONNECTOR, STUD	21
*	3.0	3.0	1006737-A2	WIRE, ELECTRICAL	20
	1	1	1003473	THUMB WHEEL ASSY	19
	1	1	1006736	RESISTOR, VAR	18
	1	1	1004648	BRACKET	17
	REF	REF	1006167	INTERCONNECTING DIAGRAM	16
	3	3	1006813	INDICATOR, DIGITAL DISPLAY	15
	1	1	1006817	INDICATOR, DIGITAL DISPLAY	14
	1	1	1006818	INDICATOR, DIGITAL DISPLAY	13
	1	1	1006819	INDICATOR, DIGITAL DISPLAY	12
*	.25	.25	SEE NOTE 6	SLEEVING	11
*	.50	.50	QQ-W-343 TYPE S	WIRE, SOLID AWG 26	10
	X	3	1003817 011	DECODING MODULE ASSY	9
	1	1	1003534	E/L HOLD DOWN ASSY	8
	1	1	1003550	WIRING HARNESS	7
	1	1	1003568-011	KEYBOARD MODULE ASSY	6
	1	1	1004668	BRACKET, CABLE SUPPORT	5
	4	4	1003098	RELAY MODULE ASSY	4
	1	1	1003532	POWER SUPPLY ASSY	3
	1	1	1004683	HOUSING, RELAY MODULE	2
	1	1	1004786	PANEL, FRONT	1
	021	011	LIST OF MATERIALS		

1003770 | NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
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AGC NAV DSKY ASSY

CODE IDENT NO 80230 | SIZE J | NASA DRAWING NO 1003570
SCALE 1/1 | WT | SHEET 1 OF 2

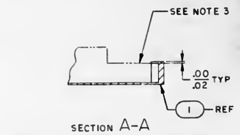
NOTICE – [illegible]

–	1003575

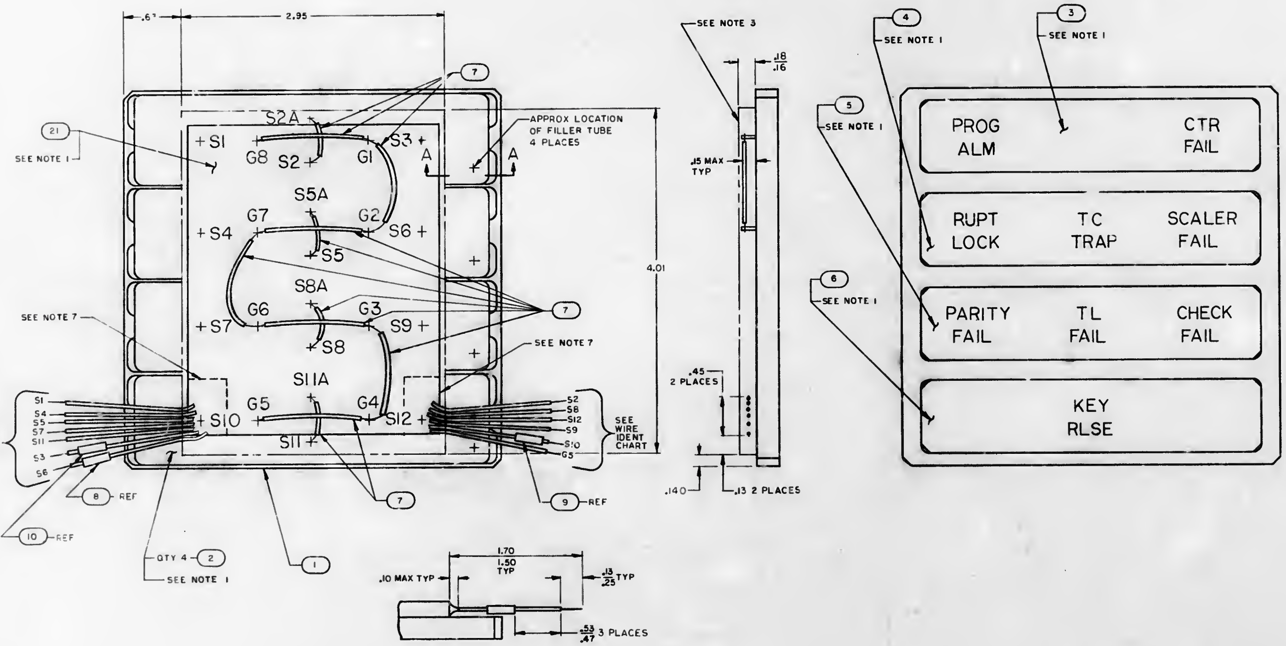
REVISIONS 24744

SYM	DESCRIPTION	DATE	APPROVAL

WIRE IDENT CHART			
LEAD DESIGNATION	FIND NO.	COLOR CODE REF	
		BASIC	TRACER
S1	11	YEL	—
S2	12	YEL	GRN
S4	13	BLK	YEL
S5	14	YEL	ORN
S7	15	RED	YEL
S8	16	YEL	BLU
S9	17	YEL	VIO
S11	18	YEL	BRN
S12	19	YEL	GRY
GS	7	BLK	—
S3	20 & 10	YELLOW SLEEVING	
S6	20 & 8	BLACK SLEEVING	
S10	20 & 9	RED SLEEVING	



SECTION A–A
SHOWN WITH FIND NO. 2, 3 & 21 REMOVED



NOTES
1. BOND FIND NO. 2 & 21 TO FIND NO. 1 & FIND NO. 3,4,5,& 6 TO FIND NO. 2 PER ND1002004, TYPE II, SEMI-RIGID
2. SOLDER PER ND1002071 USING SOLDER PER ND1002075
3. ENCAPSULATE AREA SHOWN PER ND1002236, CURE SCHEDULE A
4. * DENOTES LENGTH IN FEET
5. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
6. IDENTIFY WITH PART NO. PER ND1002019
7. STAKE WIRES IN INDICATED AREAS TO FIND NO. 21 PER ND1002004, TYPE V

	QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
	☒	1005750	INTERCONNECTION DIAGRAM	REF
	.1	1004887	INSULATOR PHOTOMASTER	21
*	1.5	1010416--20	WIRE, ELECTRICAL	20
*	.5	1010416–187	WIRE, ELECTRICAL	19
*	.5	1010416–123	WIRE, ELECTRICAL	18
*	.5	1010416–178	WIRE, ELECTRICAL	17
*	.5	1010416–169	WIRE, ELECTRICAL	16
*	.5	1010416–149	WIRE, ELECTRICAL	15
*	.5	1010416–141	WIRE, ELECTRICAL	14
*	.5	1010416–147	WIRE, ELECTRICAL	13
*	.5	1010416–160	WIRE, ELECTRICAL	12
*	.5	1010416–15	WIRE, ELECTRICAL	11
*	.04	1006322–103	SLEEVING, INSULATION	10
*	.04	1006322–078	SLEEVING, INSULATION	9
*	.04	1006322–028	SLEEVING, INSULATION	8
*	1.5	1010416–11	WIRE, ELECTRICAL	7
	1	1004888	PANEL, LEGEND D	6
	1	1004885	PANEL, LEGEND C	5
	1	1004884	PANEL, LEGEND B	4
	1	1004883	PANEL, LEGEND A	3
	4	1006386	INDICATOR, ALARM	2
	1	1004876	FRAME, ADAPTER	1
	-011	LIST OF MATERIALS		

NEXT ASSY	USED ON
1003758	

APPLICATION

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DRAWN DATE 5 NOV 65
CHECKED R. S. Edwards 12 Nov 65
APPROVAL 13 Nov 65
APPROVAL 19 Nov 65
NASA APPROVAL A. C. METZGER
MIT APPROVAL 23 Nov 65

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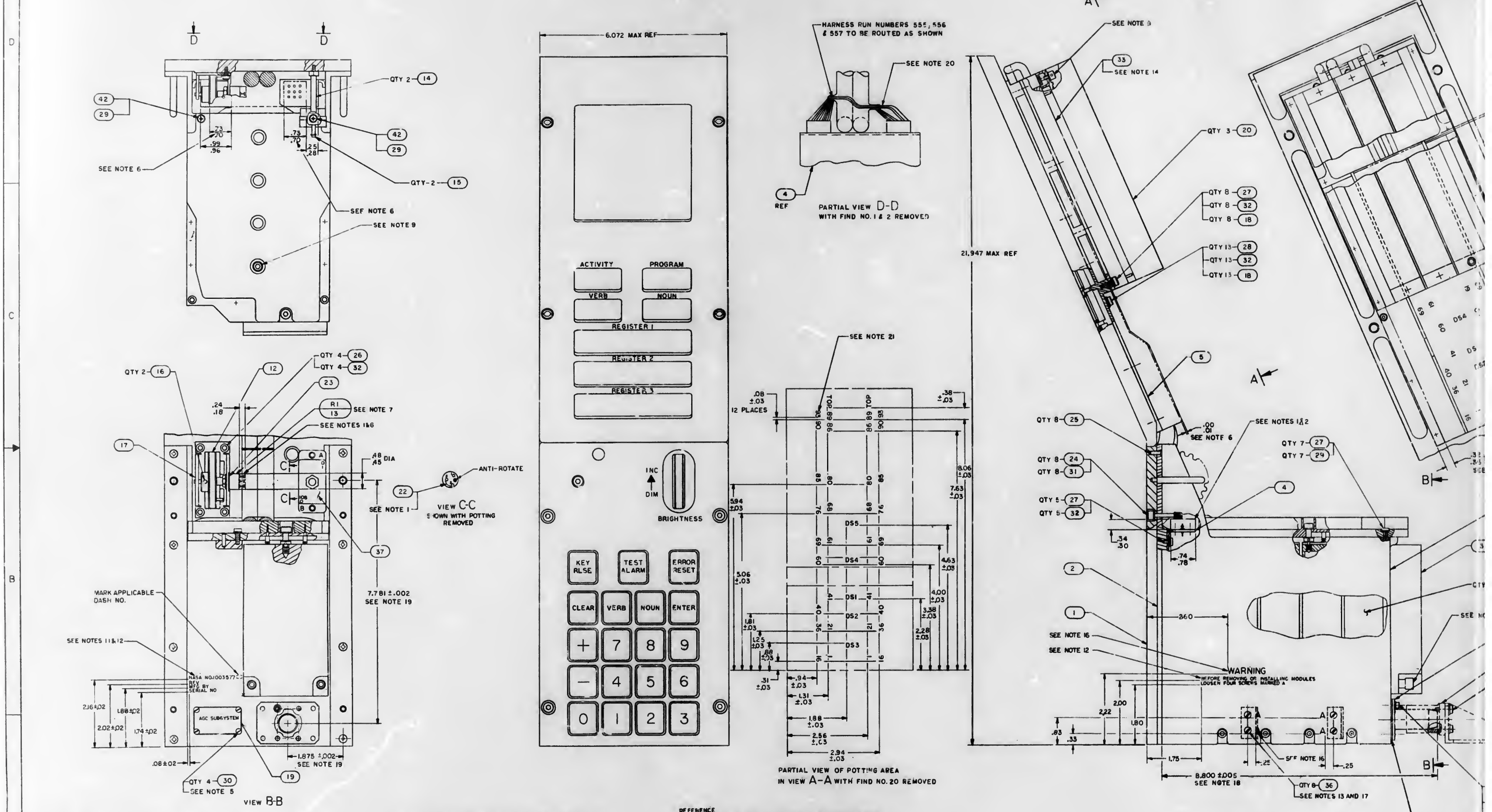
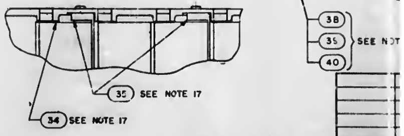
INDICATOR E/L ASSY(ALARM)
AGC DSKY,NAV
100 SERIES

CODE IDENT NO.	SIZE	NASA DRAWING NO.
80230	E	1003575
SCALE 2/1	WT	SHEET 1 OF 1





NOTES:

1. SOLDER PER ND1002071 USING SOLDER PER ND1002075
2. WIRE PER ND1002032
3. *DENOTES LENGTH IN FEET
4. FIND NO. 6 & 8 THRU 11 ARE TO BE PACKAGED & IDENTIFIED PER ND1002019
5. SECURE FIND NO 30 USING MIL-S-22473 GRADE H
6. ENCAPSULATE PER ND1002217
7. REMOVE LOCK WASHER FROM FIND NO. 13. ADJUST FIND NO. 13 TO ACHIEVE 2°-3° BACKOFF ON BRIGHTNESS STOP.
8. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
9. MOUNTING TORQUE FOR JACKING SCREWS (1004579) TO BE 15-19 IN LB
10. MOUNTING TORQUE FOR JACKING SCREWS (1004583) TO BE 3-4 IN LB
11. SERIALIZE PER ND1002023
12. MARK .08/.10 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING INK 1006271-1
13. MOUNTING TORQUE OF SCREWS "A" TO BE 3.5-4.5 IN.LB
14. APPLY FIND NO.33 TO MODULE MOUNTING SURFACES
15. ** QTY TO BE DETERMINED AT ASSEMBLY
16. MARK .18/.20 HIGH WHITE PER ND1002019 & ND1002122 TYPE II CLASS 2, USING INK 1006271-1
17. INSTALL FIND NO. 21 & FIND NO.35 AS SHOWN WITH FIND NO.36 TIGHTENED, MEASURE GAP ON EACH SIDE BETWEEN FIND NO.2 & 21 LOOSEN FIND NO.36 ON ONE SIDE ONLY JACK OUT FIND NO. 21 AND INSTALL FIND NO. 34 OVER STOP PINS ON EACH SIDE OF FIND NO. 21 AS REQUIRED SO THAT THE TOTAL THICKNESS OF FIND NO.34 IS .001/.004 GREATER THAN MEASURED GAP. JACK IN FIND NO.21 AND TIGHTEN FIND NO.36
18. USE FIND NUMBERS 38, 39 & 40 AS REQUIRED TO OBTAIN 8.800 ±.005 DIMENSION

REFERENCE

1. 1020105: NAV DSKY TO HANDLING FIXTURE ASSEMBLY
~~2. FIXTURE ASSY-FRONT PANEL, AGC NAV DSKY~~

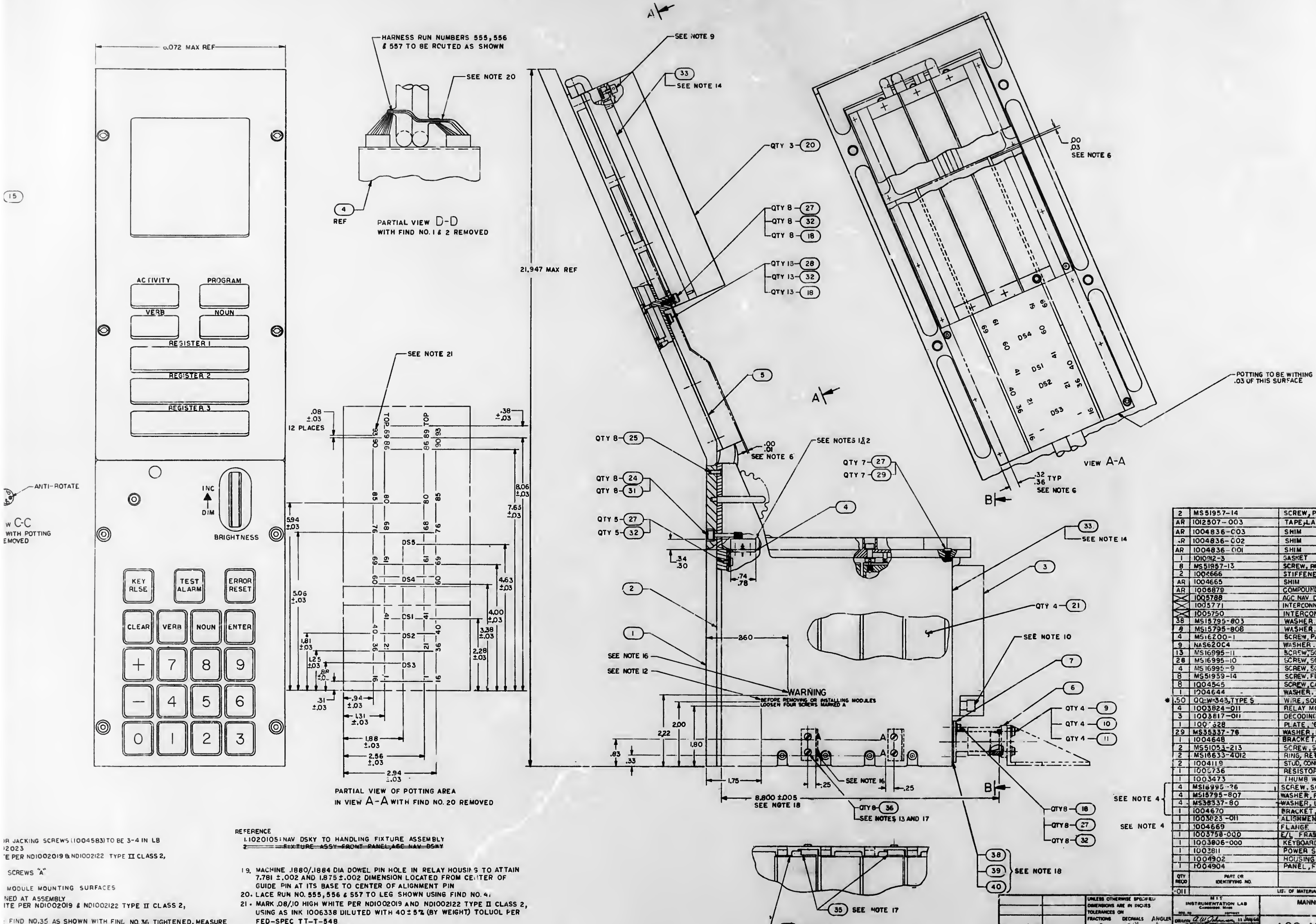
19. MACHINE .1880/.1884 DIA DOWEL PIN HOLE IN RELAY HOUSING TO ATTAIN 7.781 ±.002 AND 1.875 ±.002 DIMENSION LOCATED FROM CENTER OF GUIDE PIN AT ITS BASE TO CENTER OF ALIGNMENT PIN
20. LACE RUN NO. 555, 556 & 557 TO LEG SHOWN USING FIND NO. 41
21. MARK .08/.10 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, USING AS INK 1006338 DILUTED WITH 40 ± 5% (BY WEIGHT) TOLUOL PER FED-SPEC TT-T-848
22. AR DENOTES AS REQUIRED

1003770
NEXT ASSY

1003577 SHEET 1 OF 1

1003577 | -

REVISIONS



R JACKING SCREWS (1004583) TO BE 3-4 IN LB
)2023
'E PER ND1002019 & ND1002122 TYPE II CLASS 2,

SCREWS "A"

MODULE MOUNTING SURFACES

NED AT ASSEMBLY
ITE PER ND1002019 & ND1002122 TYPE II CLASS 2,

FIND NO.35 AS SHOWN WITH FIND NO. 36 TIGHTENED, MEASURE
'WEEN FIND NO.2 & 21 LOOSEN FIND NO. 36 ON ONE SIDE ONLY
I AND INSTALL FIND NO. 34 OVER STOP PINS ON EACH SIDE OF FIND NO. 21 AS
E TOTAL THICKNESS OF FIND NO.34 IS .001/.004 GREATER THAN
N FIND NO.21 AND TIGHTEN FIND NO.36
38,39 & 40 AS REQUIRED TO OBTAIN 8.800 ±.005 DIMENSION

REFERENCE
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20. LACE RUN NO. 555, 556 & 557 TO LEG SHOWN USING FIND NO. 41
21. MARK .08/.10 HIGH WHITE PER ND1002019 AND ND1002122 TYPE II CLASS 2, USING AS INK 1006338 DILUTED WITH 40 ± 5% (BY WEIGHT) TOLUOL PER FED-SPEC TT-T-548
22. AR DENOTES AS REQUIRED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	MS51957-14	SCREW, PAN HEAD	42
AR	1012507-003	TAPE, LACING	41
AR	1004836-003	SHIM	40
AR	1004836-002	SHIM	39
AR	1004836-001	SHIM	38
1	1010912-3	GASKET	37
8	MS51957-13	SCREW, PAN HEAD	36
2	1004666	STIFFENER	35
AR	1004665	SHIM	34
AR	1006879	COMPOUND, THERMALLY CONDUCTIVE	33
☒	1005788	AGC NAV DSKY OUTLINE DRAWING	REF
☒	1005771	INTERCONNECTION FLOW DIAGRAM	REF
☒	1005750	INTERCONNECTION DIAGRAM	REF
38	MS15795-803	WASHER, FLAT	32
8	MS15795-808	WASHER, FLAT	31
4	MS16200-1	SCREW, PAN HEAD	30
9	NAS620C4	WASHER, FLAT	29
13	MS16995-11	SCREW, SOCKET HEAD	28
28	MS16995-10	SCREW, SOCKET HEAD	27
4	MS16995-9	SCREW, SOCKET HEAD	26
8	MS51959-14	SCREW, FLAT HEAD	25
8	1004545	SCREW, CAPTIVE	24
1	1004644	WASHER, KNURLED	23
* .50	QQ-W-343, TYPE S	WIRE, SOLID AWG 26	22
4	1003824-011	RELAY MODULE ASSY	21
3	1003817-011	DECODING MODULE ASSY	20
1	100[illegible]628	PLATE, IDENT	19
29	MS35337-78	WASHER, LOCK	18
1	1004648	BRACKET, POTENTIOMETER	17
2	MS51053-213	SCREW, SET	16
2	MS16633-4012	RING, RETAINING	15
2	1004119	STUD, CONNECTOR	14
1	100[illegible]736	RESISTOR, VARIABLE	13
1	1003473	THUMB WHEEL ASSY	12
4	MS16995-26	SCREW, SOCKET HEAD	11
4	MS15795-807	WASHER, FLAT	10
4	MS35337-80	WASHER, LOCK	9
1	1004670	BRACKET, ANGLE	8
1	1003823-011	ALIGNMENT PIN ASSY	7
1	1004669	FLANGE	6
1	1003758-000	E/L FRAME & HARNESS ASSY	5
1	1003806-000	KEYBOARD MODULE ASSY	4
1	1003811	POWER SUPPLY	3
1	1004902	HOUSING, RELAY MODULE	2
1	1004904	PANEL, FRONT	1

-011 LIST OF MATERIALS

NEXT ASSY	USED ON
1003770	

APPLICATION

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CHECKED A.E. Bogan 12 JAN 66
APPROVAL
APPROVAL Eldon C. Hall 14 Jan 66
NASA APPROVAL A. C. METZGER
MIT APPROVAL
MIT APPROVAL

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AGC NAV DSKY ASSY

CODE IDENT NO 80230
SIZE J
1003577
SCALE 1/1
WT
SHEET 1 OF 1

NOTICE – [illegible]

22255

SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
A		REVISED PER TDRR 23624	RAJ		11-2-65	WK
B		REVISED PER TDRR 24676	RAJ		12-3-65	WK
C		REVISED PER TDRR 26021	RAJ		8-8-66	WK
D		" " " 29163	"		5-31-66	
E		REVISED PER TDRR 31728	LAL		11-3-66	
F		REVISED PER TDRR 31999			29 NOV 66	
G		REVISED PER TDRR 32175		JRC		
H		REVISED PER TDRR 32290				
J		REVISED PER TDRR 32357.			6 JAN 67	
K		REVISED PER TDRR 33160			9 MAR	
L		REVISED PER TDRR 33487				

-171	-161	-151	-141	-131	-121	-111	-101	-091	-081	-071	-061	-051	-041	-031	-021	-011	EFFECTIVITY UNDEFINED	TITLE	REMARKS	FIND NO.
617	316	615	614	613	612	611	610	609	608	607	606	605	604	603	602	601	G & N EFFECTIVITY			
6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572	6015572		LEM + 28 VDC 800~ POWER DISTRIBUTION		45
6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571	6015571		LEM 0 VDC DISTRIBUTION		44
6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570	6015570		LEM + 28 VDC POWER DISTRIBUTION		43
																				42
																				41
																				40
																				39
																				38
																				37
																				36
																	ND1002345	DESCRIPTION & REQUIREMENTS FOR COMPLETING ACC FORM I (REVISED)		35
ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349	ND1002349				POST INSTALLATION C/O SPEC. FOR LEM G&N SYSTEM (KSC)		34
ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323	ND1002323		POST-INSTALLATION C/O SPEC FOR LEM G&N SYSTEM		33
ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322	ND1002322		G&N PROGRAMMING REQ'TS (D&C) FOR ACE (LM)		32
ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319	ND1002319		ACE-S/C COMPUTER SUBPROGRAM SPEC APPOLLO CM & LM TESTING		31
PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS 6015000	PS 6015000	PS 6015000	PS 6015000	PS6015000		MASTER END ITEM DETAIL SPECIFICATION - PART I PGNCS FOR LEM.		30
PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS6015000	PS 6015000	PS 6015000	PS 6015000	PS 6015000	PS 6015000		MASTER END ITEM DETAIL SPECIFICATION - PART II PGNCS FOR LEM		29
																				28
																				27
																				26
																				25
																				24
ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP6015497	ATP 6015497	ATP 6015497	ATP 6015497	ATP 6015497	ATP 6015497		ATP APOLLO LEM INERTIAL SUB SYSTEM		23
																				22
																				21
ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042	ND1021046	ND1021042	ND1021042	ND1021042	ND1021042	ND1021042		LEM PRIMARY GUIDANCE, NAVIGATION AND CONTROL SYSTEM MANUAL		20
ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038	ND1021038		PACKING, SHIPPING & HANDLING MANUAL		19
ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039	ND1021039		AUXILIARY GROUND SUPPORT EQUIPMENT MANUAL		18
ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040	ND1021040		BENCH MAINTENANCE GSE CMRM		17
																				16
																				15
																				14
																				13
																				12
																				11
1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042	1021042		PRIMARY GUIDANCE, NAVIGATION AND CONTROL SYSTEM MANUAL		10
																				9
																				8
																				7
																				6
															2001463	2001463		IMU TEMPERATURE CONTROL SYSTEM SCHEMATIC DIAGRAM - BLOCK II		5
															2001452	2001452		APOLLO IMU TEMPERATURE CONTROL SYSTEM - BLOCK II TWO WIRE MECH		4
6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562	6015562		LEM 5 AXIS MODING		3
6015564	6015564	6015564	6015564	6015564	605564	6015564	6015564	6015564	6015564	6015564	6015564	6015564	6015564	6015564	6015564	6015564		TWO WIRE MECHANIZATION OF APOLLO STABILIZATION LOOPS (LEM)		2
6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563	6015563		TWO WIRE MECHANIZATION OF APOLLO PIPA LOOPS (LEM)		1

NOTES:

1. THIS DRAWING FOR REFERENCE ONLY.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED IN MIL-D-70327.

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

ND1000000	
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μf
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN 9-2-65
CHECKED 9-7-65
APPROVED 7 Sept 65
APPROVED
APPROVED MIT
APPROVED MSC NOT REQUIRED PER LETTER NASA PP7 65-612
DATE

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

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SUPPORTING DOCUMENT LIST
LEM

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SCALE —
SHEET 1 OF 1